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ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

OF THE

PROVINCE of ALBERTA

1920

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY



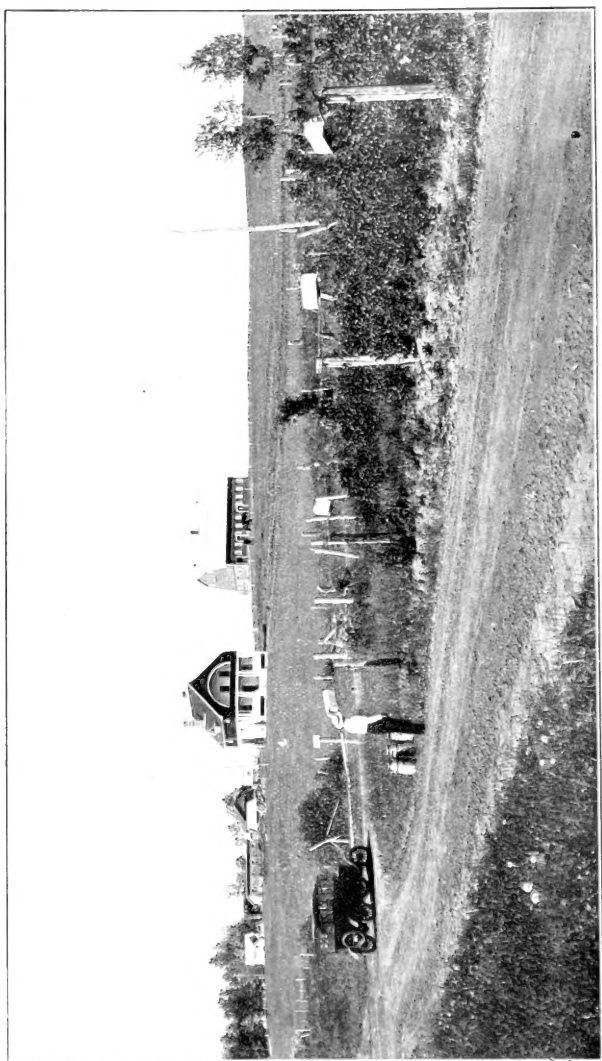
EDMONTON:

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1921







AN ALBERTA FARM HOME

ANNUAL REPORT
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DEPARTMENT OF AGRICULTURE.

EDMONTON, DECEMBER 31ST, 1920.

TO HIS HONOUR

ROBERT GEORGE BRETT,

Lieutenant Governor of the Province of Alberta.

SIR,—

I have the honour to submit herewith the Report of the Department of Agriculture for the year 1920.

I have the honour to be, Sir,

Your obedient servant,

DUNCAN MARSHALL,

Minister of Agriculture.

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Report of the Dairy Commissioner.

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Report of the Superintendent of Agricultural Schools.

Report of the Director of Démonstration Farms.

Report of the Superintendent of Fairs and Institutes.

Report of the Superintendent of Women's Institutes.

Report of the Crop Statistician.

Report of the Recorder of Brands.

Report of the Chief Game and Fire Guardian.

Report of the Natural History Society.

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Appendix to Report of Superintendent of Fairs and Institutes.

DEPARTMENT OF AGRICULTURE.

Heads of Branches.

S. G. Carlyle, Live Stock Commissioner.

C. P. Marker, Dairy Commissioner.

P. R. Talbot, V.S., Provincial Veterinarian.

J. D. Smith, Supt. of Seed and Weed Branch.

J. H. Hare, Supt. of Poultry Branch.

A. E. Meyer, Supt. of Agricultural Schools and Demonstration Farms.

D. Douglas, Director of Demonstration Farms.

Alex. Galbraith, Supt. of Fairs and Institutes.

Miss M. MacIsaac, Supt. of Women's Institutes.

B. Lawton, Chief Game and Fire Guardian.

J. Wilson, Brand Recorder.

J. McCaig, Publicity Commissioner and Editor of Publications.

REPORT OF THE DEPUTY MINISTER

HON. DUNCAN MARSHALL,

Minister of Agriculture,

Edmonton.

I have the honour to submit herewith the fourteenth annual report of the Department of Agriculture. It covers an account of general agricultural conditions as well as special reports from the heads of administrative branches and includes also appendices containing reports from various associations.

The farmers of the province have passed through one of the most trying years in our history. The winter of 1919-20 set in early in October when a considerable amount of the crop was still in stook. The severity of the early part of the winter combined with the depth of snow made it necessary that feeding be commenced from one to two months earlier than usual. The winter was fairly severe throughout and the spring unprecedently late. Certain sections of the province had experienced a short crop and as a consequence these districts were exceedingly short of feed. The Department realized early in the season that there would not be sufficient feed in the province to support the stock which was on hand. In the month of August, 1919, the Department secured leases of a considerable acreage of hay in Northern Manitoba and contracted the hay cut and stacked. A little later in the season contracts were made with firms in Ontario and Quebec for large amounts of hay to be shipped continuously throughout the winter. Altogether approximately three thousand cars of hay were purchased by the Department and sold to farmers at cost. This hay was distributed to almost every station in Alberta. Notwithstanding the large amounts of hay and feed which were purchased by farmers, the losses in stock were heavier than in any previous year. On account of the scarcity of feed, the long distances to ship and the wide area requiring feed at one time, it was practically impossible to have all points properly served, the result being that a considerable portion of the province was entirely without feed during part of the early spring. When spring arrived the weather was very favorable, grass came quickly, and, considering the condition of stock generally, it made rapid improvement.

The growing season proved quite favorable for most parts of the province, certain sections throughout the north and the north-east having the largest crops in their history. No early fall frosts were experienced, the result being that most of the grain was cut without any injury whatever from frost. Certain sections of the southern part of the province experienced an exceedingly heavy wind storm in the early part of June and approximately 50,000 acres of crop was blown out or covered and an additional area partly destroyed. A considerable portion of this area was seeded to winter rye, this crop going into the winter in fairly good condition. Certain limited sections of the south and east were not favored with sufficient moisture so that the crop in these areas was quite

short. The area of short crop was quite small in comparison with the total area in the province and slightly reduced the average, especially of wheat. In certain scattered districts and in widely separated areas, grasshoppers proved a serious pest. The Department directed the work of control amongst the farmers and received hearty co-operation with the result that the pest was largely kept under control. Details of this will appear elsewhere in the report.

During the year it was found necessary in a few cases where families had suffered from repeated lightness of crops to give relief in household necessities such as fuel and flour.

Harvesting operations were carried on under particularly favorable conditions. The best of ripening weather obtained during the harvesting season, and while heavy rains occurred in the early part of threshing, on the whole the grain was harvested and threshed under good conditions and the quality was found to be superior to grain of most previous years. In the district north and west of Edmonton, weather conditions were not so favorable for either harvesting or threshing. The crop, however, was quite up to the average in yield. There is an abundance of feed for live stock as well as the largest amount of grain by several millions of bushels which the province has yet had for export. It is unfortunate that there was such a serious drop in prices for both grain and live stock. At the end of the year the prices for well finished cattle, sheep and hogs has considerably recovered and the tendency is for farmers to market their low-priced grain through live stock wherever possible.

I wish to express my personal appreciation of the hearty support received during the year from the heads of the branches and members of the staff generally. The acute feed situation, the short crop in certain districts and the prolonged winter brought additional responsibility which was cheerfully assumed by all members of the Department.

(Signed) H. A. CRAIG,

Deputy Minister.

REPORT OF THE PROVINCIAL LIVE STOCK COMMISSIONER

HON. DUNCAN MARSHALL.

Minister of Agriculture.

I have the honour to submit herewith the report of the Live Stock Commissioner's Branch for the year 1920.

The Live Stock Industry of the Province is in as satisfactory a condition as any other farm interest. The season of 1920 saw top prices on all farm commodities but owing to the unusual conditions which prevailed the farmers of this province did not participate in the general prosperity which existed to a large extent over all the other provinces of Canada. The season of 1919 saw a very short crop harvested in the southern and eastern parts of the province and in some districts there was practically a crop failure. This was followed by one of the longest and coldest winters in the history of the province which resulted in a great shortage of feed. Hay was shipped in from Manitoba and Ontario in large quantities but the price was so high that in a great many instances the cost of wintering was more than the cattle were worth. Cattle went on pasture in poor condition but the season was favorable and they came into the winter of 1921 in splendid condition, though in a great many cases there was evidence of the hard winter shown in the unsatisfactory weights of the cattle marketed.

The fall of 1920 saw a great slump in prices of all farm products, and of the classes of live stock, cattle and sheep were the most affected. Cattle dropped to pre-war prices, and the market for wool and breeding sheep was very low, though some satisfactory sales were made, especially of wool through the Co-Operative Wool Growers' Association. There has been a demand for small flocks of sheep in various districts, principally in the central and northern parts of the province. There is no doubt that the future of the sheep-breeding industry is the keeping of small flocks on many farms rather than large flocks on a few farms.

The breeders of commercial sheep are urged to have rape or some other soiling crop ready to turn the lambs on when weaned and supplement with grain, and thus place them on the market early and in first class condition to get the highest market price.

The prices of hogs has been more satisfactory, but there has been a shortage of this class of stock which will no doubt be overcome during the next year as there is a fairly strong demand for good young brood sows.

Dairy products have not shared in the general slump and this has resulted in a strong demand for good dairy cows of which there is a scarcity in the province at the present time, and high prices are still prevailing for this class of stock. The sales of pure-bred stock held under the various cattle, sheep and swine breeders' associations held at Calgary, Edmonton and Lacombe were well attended and the three bull sales were

a success. Prices at Calgary and Edmonton averaged considerably higher than in 1919. There were no sensational prices for individual animals as in 1919 but the general average quality of the stock was much improved.

The swine and sheep sales were not so satisfactory, but this was no doubt due to the financial conditions which prevailed at the time of the sale. The slump in the prices of grain came at this time and farmers were not in the mood to do any purchasing. Outstanding animals sold for good prices but quite a large number remained unsold.

The Dairy Cattle Sale at Calgary was quite successful, especially that of grade cows. Twenty-six sold for an average of one hundred and thirty-one dollars (\$131.00). A great improvement was noticed in the quality and condition of animals offered at all these sales and the breeders of the province are to be congratulated on the efforts they are putting forth to improve their stock.

Below is a summary of the animals sold and prices realized at the various sales held during the past year.

EDMONTON BULL SALE.

	No. Entered.	No. Sold.	Amount.	Average.
Aberdeen Angus	50	29	\$ 5,805.00	\$200.17
Ayrshire	1	1	100.00	100.00
Hereford	55	31	7,590.00	244.83
Holstein	4	3	565.00	188.33
Shorthorn	178	145	39,570.00	272.89
Red Polled	2			
	290	209	\$53,630.00	\$256.60

CALGARY BULL SALE.

	No.	Amount.	Average.
Red Polled	1	\$270.00	\$270.00
Galloways	7	1,510.00	215.70
Herefords	165	33,795.00	321.85
Shorthorns	197	53,390.00	271.00
Aberdeen Angus	37	10,920.00	295.00
	347	\$99,885.00	\$287.85

LACOMBE BULL SALE.

	No.	Amount.	Average.
Shorthorns	130	\$32,135.00	\$231.19
Aberdeen Angus	39	7,460.00	191.28
Herefords	83	14,815.00	178.49
	261	\$54,410.00	\$208.46

SALE OF DAIRY CATTLE, SHEEP AND SWINE, CALGARY.

SHEEP

	No.	Total	Aver.
Shropshire ewes	25	\$ 454.00	\$18.16
Suffolk ewes	20	482.00	24.10
Oxford ewes	2	60.00	30.00
Grade ewes	40	407.50	10.19
Shropshire rams	37	1,547.00	41.81
Suffolk rams	18	513.00	28.50
Oxford rams	23	813.00	35.36
	165	\$4,281.50	\$25.95

SWINE

	No.	Total	Aver.
Berkshire females	25	\$1,355.00	\$54.20
Duroc Jersey females	2	78.00	39.00
Berkshire boars	14	772.00	55.15
Duroc Jersey boars	1	40.00	40.00
Tamworth boars	1	25.00	25.00
	43	\$2,270.00	\$52.80

DAIRY CATTLE

	No.	Total	Aver.
Holstein females	15	\$2,820.00	\$188.00
Red Polled females	2	270.00	135.00
Grade Holstein females	26	3,417.50	131.45
Holstein bulls	2	340.00	170.00
Ayrshire bulls	1	55.00	55.00
	46	\$6,902.50	\$150.05

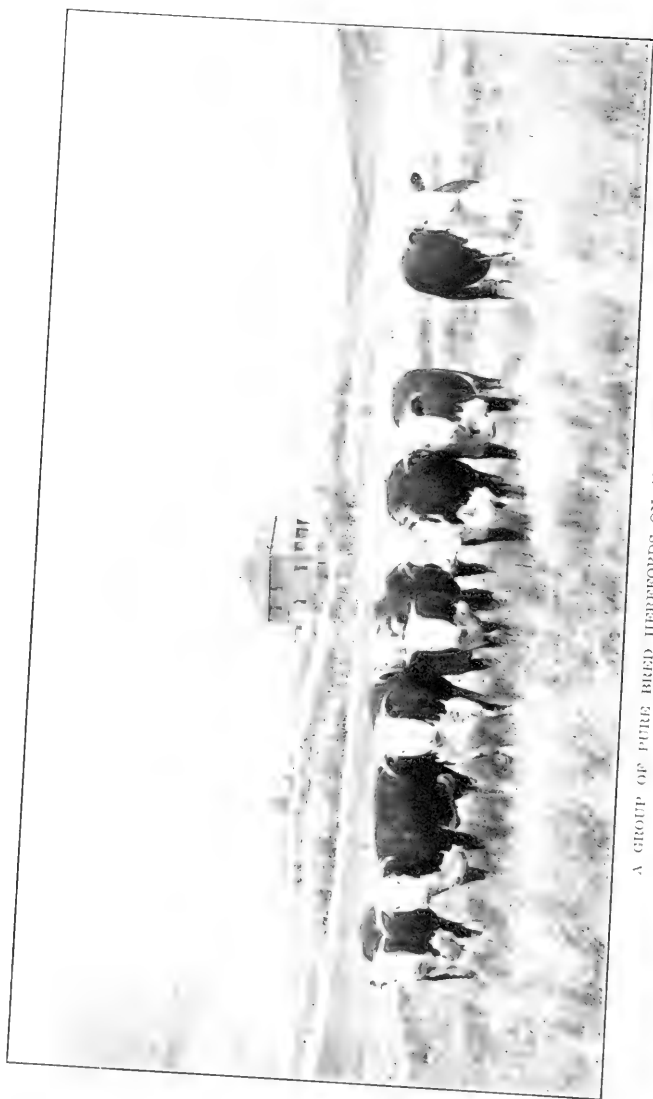
GOATS

	No.	Total.	Aver.
Angora Goats	3	\$ 36.00	\$ 12.00

Total Sales—257—\$13,490.00.

EDMONTON SHEEP AND SWINE SALE.

	No.	Total	Aver.
Oxford males	18	\$ 638.00	\$35.44
Shropshire females	7	140.00	20.00
Shropshire males	6	161.00	26.83
Suffolks males	6	167.00	27.83
Hampshire females	5	52.00	10.40
Hampshire males	6	210.00	35.00
Females	12	\$ 192.00	\$16.00
Males	36	1,176.00	32.67
	48	\$1,368.00	\$28.50
Grades ewes	12	\$ 173.00	\$14.42
Yorkshire, females	6	258.00	43.00
Berkshire, females	2	40.00	20.00
Berkshire, males	6	352.00	58.66
Females	8	\$ 298.00	\$37.25
Males	6	352.00	58.66
	14	\$ 650.00	\$46.58



A GROUP OF PURE BRED HEREFORDS ON AN ALBERTA RANCH

There has been very little change in the price of horses and the market is somewhat dull, except for good heavy geldings and mares. The department, acting in conjunction with the Clydesdale and Percheron breeders, purchased two outstanding stallions during the year with a view of encouraging the breeding of high class draft horses.

One of the purchases was of the Clydesdale breed, "Craigie Masterpiece" (18297) and was bought from James Kilpatrick, Kilmarnock, Scotland, and landed in Canada during the early part of April. The other, a Percheron stallion, "Job" 84808 (83984) was purchased from Dunhams at the International Fat Stock Show at Chicago in November. No doubt these horses will give a good account of themselves in the future and this action of the government will act as a stimulus to the horse breeding industry of the Province.

The sum of \$197,907.80 was spent under the Live Stock Encouragement Act for the purchase of 3386 cattle. The great demand this year was for milk cows principally of dual-purpose type. The purchasers are alive to the advantage of a little ready money to pay grocery bills, etc., and realize that one of the surest methods of deriving an income is from a few good dairy cows.

Below is the financial report for the year.

STATEMENT OF WORK ACCOMPLISHED UNDER THE LIVE STOCK ENCOURAGEMENT ACT DURING 1917, 1918, 1919, 1920.

NUMBER OF LOANS GUARANTEED

1917	209
1918	258
1919	213
1920	93
	—
	772

AMOUNT OF LOANS GUARANTEED

	1917	\$ 455,620.00
	1918	564,480.00
	1919	487,563.00
	1920	216,253.00
		—
		\$1,723,916.00
Less Unexpended Balances		\$ 20,131.08
Total Money Spent		\$1,703,784.92

There are in all 4,124 borrowers under the Act with an average of \$418.00 to each borrower.

NUMBER OF CATTLE PURCHASED

	1917	4,536
	1918	8,329
	1919	9,629
	1920	3,386
		—
		25,880
Average Price per head		\$65.00

DEPARTMENT OF AGRICULTURE

SUMMARY OF LINE OF CREDIT

Line of Credit		\$1,525,000.00
Total Amount of Loans Guaranteed	\$1,723,916.00	
Less Total Repayments	318,731.26	
	<hr/>	
	\$1,405,184.74	
Amount under line of Credit to work on	\$ 119,815.26	
	<hr/>	
	\$1,525,000.00	\$1,525,000.00

REPAYMENTS

Amount Repaid in 1917	\$ 3,250.00
Amount Repaid in 1918	37,216.97
Amount Repaid in 1919	122,909.93
Amount Repaid in 1920	155,354.36
	<hr/>
	\$318,731.26

STATEMENT OF WORK ACCOMPLISHED UNDER THE LIVE STOCK ENCOURAGEMENT ACT FROM JANUARY 1ST, 1920, TO DECEMBER 31ST, 1920.

LOANS GUARANTEED

Total number of Loans Guaranteed	93
Total Amount of Loans Guaranteed 1920	\$216,253.00
Less Unexpended Balances for 1920	18,345.20
	<hr/>
Total Amount of Money Used in 1920	\$197,907.80

CATTLE PURCHASED

Total number of cattle purchased in 1920	2,891
Calves at foot, 1920	492
Bulls 1920	3
	<hr/>
	3,386
Average Price per Head	\$58.45

REPORT OF THE DAIRY COMMISSIONER

SIR,—I have the honour to submit herewith the report of the Dairy Commissioner's Branch for the year ending December 31st, 1920, under the following heads:—

- I.—General.
- II.—Creameries and Cheese Factories.
- III.—Marketing of Creamery Butter.
- IV.—The Department's Butter-Grading Service.
- V.—Instruction Work.

I. GENERAL.

The outstanding feature in connection with the dairy industry for the year was the increased volume of production. Taking into consideration the very severe weather conditions that obtained during the early part of the year, the scarcity and high price of cattle feeds, one cannot but be impressed with the fact that under more favorable conditions there would have been a much larger increase. A careful estimate places the value slightly over \$34,000,000 on the total dairy production for the year 1920, being an increase of some 10% over that of last year. The greater part of this increased value is, of course, due to the continued rise of the prices of creamery butter and, therefore, of the relative market value of all other dairy products. The year's production of creamery butter was estimated at 12,150,000 pounds, valued at \$6,864,750; the output of factory cheese was 456,534 pounds representing a selling value of \$128,839. No figures are as yet available to show the production of butter in home dairies but it was undoubtedly larger than that of the previous years in that during the period of rising prices for all food commodities greater quantities of dairy products were consumed, more particularly on the farms and in rural and semi-urban communities. "The Newer Knowledge of Nutrition" has demonstrated that dairy products are among the cheapest and best foods available of animal origin, special emphasis being laid upon the health and strength giving constituents (vitamines) which they contain. Considerable publicity has been given to this phase of the dairy industry through public bodies such as the National Dairy Council and consumers' organizations, with the result that there has been considerable increase in the consumption of dairy products.

The latter part of the year will be remembered as the period during which the "break" occurred in the dairy produce markets. The dairyman is now face to face with the period in which the price level will attempt to adjust itself to the new economic conditions. This period will naturally be one of a good deal of stress in various products, but it had to come and our dairy industry will undoubtedly successfully weather the storm, taking stock of equipment and working methods, and make such readjustments as the new conditions call for. For a series of years assistance has been offered to the dairy farmers in the matter of cow testing and dairy record work. During the war period with the insistent

demand for greater production the farmers were not able to give their attention to this and other matters important in themselves but only relatively so at the time. This will in the near future be a large and fruitful field to develop. Then there is the matter of providing and using an abundance of cooling material in preparing cream for marketing. With high-priced butterfat a differential of 3c per pound between grades did not look very big; when the butter market reaches what will be the future normal level that same differential will look considerably larger and more nearly sufficient to warrant the expenditure of a little more care and attention in the production of a higher grade of cream or butter. Then there is the question of competitive buying of cream. It will be for the buyers to determine just to what extent they are willing to finance, out of the proceeds for their cream, the number of competitive buyers and the measure of service demanded at the hands of these buyers.

These and other questions that have to do with the improving of quality and the cheapening of products will in the immediate future engage the attention of the dairymen of Alberta.

DAIRY LEGISLATION.

During the past year there were issued a number of new Regulations under the provisions of The Dairymen's Act. Printed copies of the Regulations were furnished to the operators of creameries and cheese factories and all other licensees under the Act.

LICENSES AND PERMITS

Two hundred and sixty four permits were issued during the year to applicants for cream testers and graders' licenses who furnished satisfactory references as to their competency. The majority of the persons to whom permits were granted presented themselves for the examinations that were held from time to time. Some discontinued work before they were given an examination and thirty-one, failing to report, had their permits cancelled.

Fifty-five licenses in Form C were issued to operators of creameries and cheese factories and three hundred and seventy-three licenses were issued to operators of cream stations.

At the end of the year five hundred and eleven licenses had been issued in forms A and B to testers and graders of cream. Two hundred and forty-two of these were renewals, the remaining two hundred and sixty-nine were issued following the satisfactory practical and written examination of the applicants.

The total fees accompanying applications for licenses amounted to \$3,401.00.

SUSPENSIONS AND CANCELLATIONS

As already stated, thirty-one permits were cancelled owing to the failure of the holders to report for examination. One license in Form B was suspended for the period of fifteen days, a second for a period of thirty days and a third was cancelled, for violation of provisions of The Dairymen's Act and Regulations.

PROSECUTIONS

Thirteen prosecutions were instituted and resulted in twelve convictions and the imposing of fines. The offences consisted in (1) the failure to hold samples as required, (2) the improper grading of cream as received from patrons, (3) the use of unauthorized grade standards and descriptions and (4) the over and under reading of the Babcock test.

II. CREAMERIES AND CHEESE FACTORIES

There were two cheese factories, five combined cheese factories and creameries and 48 creameries in operation in the province during the year 1920. The following list gives particulars as to location and ownership.

Cheese Factories

<i>Name of Factory</i>	<i>P. O. Address</i>	<i>Proprietor or Manager</i>
Olds Central Cheese Factory	Olds	The Central Creameries, Ltd., Calgary.
Wild Rose Cheese Factory	Ponoka	The Edmonton City Dairy, Ltd., Edmonton.

Combined Creameries and Cheese Factories

Crystal Dairy	Didsbury	The Crystal Dairy Ltd., Calgary.
Woodland Dairy, Ltd.	Edmonton	The Woodland Dairy Ltd. Edmonton.
Edmonton City Dairy Ltd.	Edmonton	The Edmonton City Dairy, Ltd., Edmonton.
Wetaskiwin Creamery	Wetaskiwin	The Edmonton City Dairy, Ltd., Edmonton.
Olds Co-operative Creamery	Olds	The Olds Co-operative Cream- ery Association.



A LOCAL CREAMERY

Creameries

Meadow Creamery	. Alix	. The Meadow Creamery Co., Ltd.
Bentley Creamery	. Bentley	. Kenneth Kerr.
White Swan Creamery	. Bowden	. Red Deer Dairy Products, Ltd., Red Deer.
Pine Lake Creamery	. Pine Lake	. Red Deer Dairy Products, Ltd., Red Deer.
Red Deer Dairy Products Ltd.	. Red Deer	. Red Deer Dairy Products, Ltd., Red Deer.
P. Burns & Co.	. Calgary	. P. Burns & Co. Ltd.
Campbell & Griffin Ltd.	. Calgary	. Campbell & Griffin, Ltd. Calgary.
Calgary Central Creamery	. Calgary	. The Central Creameries Ltd. Calgary.
Camrose Central Creamery	. Camrose	. The Central Creameries Ltd. Calgary.
Eckville Central Creamery	. Eckville	. The Central Creameries Ltd. Calgary.
Cardston Creamery	. Cardston	. The Cardston Creamery Asso- ciation.
Carmangay Creamery	. Carmangay	. C. H. Messenger.
Claresholm Creamery	. Claresholm	. The Claresholm Creamery Association.
Cochrane Creamery	. Cochrane	. The Cochrane Creamery As- sociation.
Coronation Creamery	. Coronation	. A. E. Kofoed.
Twin Spruce Creamery	. Elkton	. A. R. Kendrick
Daysland Creamery	. Daysland	. The Edmonton City Dairy, Ltd., Edmonton.
Delburne Creamery	. Delburne	. The Edmonton City Dairy, Ltd., Edmonton.
Ferintosh Creamery	. Ferintosh	. The Edmonton City Dairy, Ltd., Edmonton.
Grand Prairie Creamery	. Grande Prairie	. The Edmonton City Dairy, Ltd., Edmonton.
Stettler Creamery	. Stettler	. The Edmonton City Dairy, Ltd., Edmonton.
Vermilion Creamery	. Vermilion	. The Edmonton City Dairy, Ltd., Edmonton.
Enterprise Dairy	. Edmonton	. The Enterprise Dairy Ltd.
P. Burns & Co.	. Edmonton	. P. Burns & Co. Ltd.
Brookfield Creamery	. Edmonton	. The Swift Canadian Co. (Creamery Department).
Northern Creamery	. Edmonton	. The Northern Creameries Ltd.
Hanna Creamery	. Hanna	. L. W. Kofoed.
Hartshorn Creamery	. Hartshorn	. Hartshorn Co-operative Cream- ery Association, Ltd.
Lacombe Creamery	. Lacombe	. The Dan Morkeberg Creamery Co. Ltd., Markerville
Innisfail Creamery	. Innisfail	. The Dan Morkeberg Creamery Co. Ltd., Markerville
Markerville Creamery	. Markerville	. The Dan Morkeberg Creamery Co. Ltd., Markerville
Elnora Creamery	. Elnora	. The Dan Morkeberg Creamery Co. Ltd., Markerville
Red Deer Creamery	. Red Deer	. The Dan Morkeberg Creamery Co. Ltd., Markerville
Chief Mountain Creamery	. Lethbridge	. The Chief Mountain Cream- ery Co. Ltd.
Crystal Dairy	. Lethbridge	. The Crystal Dairy Ltd. Calgary.

Creameries (Continued)

Lochearn Creamery	Lochearn	Lochearn Creamery Co.
Crystal Dairy	Medicine Hat	The Crystal Dairy Ltd. Calgary.
Blindman Valley Creamery	Rimbey	A. M. Kerr.
Beaver Lake Farmers Creamery	Ryley	The Beaver Lake Farmers Creamery Association.
C. P. R. Dairy	Strathmore	The C. P. R. Demonstration Farm.
Water Lily Creamery	Sundre	Water Lily Co-operative Cream- ery, Ltd.
Knee Hill Creamery	Sunnyslope	Nelson & Barron.
St. Paul Creamery	St. Paul de Metis	Geo. E. Scott.
Tofield Creamery	Tofield	P. H. McIntosh.
Valhalla Creamery	Valhalla	Valhalla Co-operative Cream- ery Association.
Viking Creamery	Viking	Viking Co-operative Cream- ery Association.
Wainwright Creamery	Wainwright	The Wainwright Creamery Co. Ltd.
Youngstown Creamery	Youngstown	H. Zehren & Sons.

The cheese factories at Mountain View, Legal and Red Deer did not re-open nor were any new factories put into operation during 1920.

The creameries that had been operating at Drumheller, Riviere Qui Barre, Magrath and Morningside did not reopen. The business of the Chief Mountain creamery was moved from Cardston to Lethbridge during the early part of the year and new creameries were established and put into operation at Lochearn, Youngstown and Valhalla. The latter is now the northernmost creamery point in Canada, being situated at 55° 25' North latitude.

III. BUTTER MARKETING SERVICE

A summary is given in Tables I and II of the quantity of butter handled through the Department's butter marketing service for each of several creamery operators and for both winter and summer season. The selling price of the butter is also shown in each case.

TABLE I.

SUMMARY OF BUTTER SALES—WINTER SEASON 1919-1920.

Creamery or Shipper	Pounds of Butter Sold	Selling Price at Calgary	Average Price per Pound Cents
The D. Morkeberg Creamery Co. Ltd.			
Elmora	8,899	\$ 5,832.64	65.54
Innisfail	4,704	3,057.60	65.00
Markerville	31,966	21,107.38	66.03
Red Deer	7,840	4,978.40	63.50
Lacombe	13,797	8,839.39	64.07
Viking Co-operative Creamery Association	6,776	4,112.64	60.69
The Beaver Lake Co-operative Creamery Association, Ryley	11,107	7,256.25	65.33
The Hanna Creamery, Hanna	44,119	28,108.77	63.71
A. E. Kofoed, Coronation	41,317	26,947.16	65.22
Totals and Average	170,525	\$110,240.23	64.65

TABLE II.

SUMMARY OF BUTTER SALES—SUMMER SEASON 1920.

Creamery or Shipper	Pounds of Butter Sold	Selling Price at Calgary	Average Price per Pound Cents
The D. Morkeberg Creamery Co. Ltd.			
Elmora	38,186	\$20,643.67	54.06
Innisfail	25,536	13,808.76	54.07
Markerville	78,400	42,890.96	54.71
Red Deer	40,055	21,128.93	52.75
Lacombe	58,573	32,215.29	55.00
Sundre Co-operative Creamery Association	1,549	833.23	53.80
Viking Co-operative Creamery Association	99,199	53,692.16	54.13
The Beaver Lake Farmers' Creamery Association, Ryley	40,314	22,065.85	54.73
Hanna Creamery, Hanna	101,930	54,661.63	53.63
A. E. Kofoed, Coronation	160,603	85,723.62	53.35
Clareholm Creamery Association	9,009	4,700.51	52.18
Youngstown Creamery	21,513	12,357.98	50.41
Lochearn Creamery Co. Ltd., Lochearn	4,356	2,357.63	54.12
Valhalla Co-operative Creamery Association, Valhalla	27,328	12,801.60	46.84
Totals and Average	709,641	\$379,881.82	53.53

THE MOVEMENT OF PRICES

The "peak" of high prices for butter having now, undoubtedly, been reached and passed I submit as an interesting record a couple of tables of figures showing the relative selling prices of creamery butter during each of the years 1914-1920. Table III shows the average selling prices of butter made during the winter season, November-April (inclusive), and sold through the Department's butter marketing service. Table IV shows the relative selling prices of butter made during the summer season, May-October (inclusive) and similarly disposed of. It is true that the business upon which these figures are based represents only in the neighborhood of ten per cent. of the total butter production of the province, but since the butter in question has been shipped regularly, week by week, to the Department and sold to the wholesale trade the figures may be taken as fairly representative of the relative selling prices of the whole production, year by year, for the period covered.

TABLE III.

Winter season	Cents per pound at Calgary	Annual increase shown on a percentage basis.				
		1914-15	1915-16	1916-17	1917-18	1918-19
1914-15	27.68	100.00				
1915-16	33.20	119.94	100.00			
1916-17	40.5	146.33	122.00	100.00		
1917-18	45.57	164.63	137.26	112.50	100.00	
1918-19	50.39	182.04	151.78	124.40	110.58	100.00
1919-20	64.65	233.56	194.73	159.61	141.87	128.30

For the purpose of comparison a separate set of figures are given in Table IV, in brackets, showing the average selling price of all creamery butter in Alberta for each calendar year and as reported by the Dominion Statistician.

TABLE IV.

Summer Season	Cents per pound at Calgary	Annual increase shown on a percentage basis					
		1914	1915	1916	1917	1918	1919
1914	25.87	100.0					
1915	27.18	105.1	100.0				
	(26.795)		(100.0)				
1916	31.49	121.7	115.9	100.0			
	(30.736)		(114.7)	(100.0)			
1917	39.56	152.9	145.5	125.6	100.0		
	(38.176)		(142.5)	(124.2)	(100.0)		
1918	45.30	175.1	166.7	143.9	114.5	100.0	
	(44.469)		(166.0)	(144.7)	(116.5)	(100.0)	
1919	53.51	206.8	196.8	169.9	135.3	118.1	100.0
	(51.87)		(193.6)	(168.8)	(135.9)	(166.6)	(100.0)

IV. THE GRADING OF CREAMERY BUTTER

It was decided at the beginning of the year that the Department's butter grading service should be made more nearly self supporting. A letter was addressed to each creamery operator early in January stating that the Department felt that the utility and commercial value of the butter grading service had now become established and that a larger

share of the cost of the service should be borne by the product graded and for which grade certificates were issued. It was intimated that the Department had decided to make a service charge of ten cents per hundred pounds of butter graded. This decision was made effective by Order-in-Council and by Ministerial Order under the provisions of Section 47 of The Dairymen's Act. The form of the formal agreement covering the butter grading service was amended by adding as sub-section 3 of section 1 the following:

" (3) The grading service charge of ten cents per hundred pounds of butter packed from the churnings of which the representative packages have been scored and classified."

The form for the agreement covering the marketing of butter by the Department was amended by adding thereto as sub-section 5 of section 1 the following:

" (5) The grading service charge of ten cents per hundred pounds of butter so received and marketed."

Under the new arrangement provision was made for the testing for moisture and for effective pasteurization every churning of butter received for grading. Where the moisture contents of a representative package of butter was found to exceed sixteen per cent, no grade certificate was issued on that churning and in any case in which the butter in such a package showed the presence of peroxidase (by the Storch Test) no grade certificate was granted.

These precautions were adopted for the purpose of preventing as far as possible any lot of butter with an excessive moisture content or poor keeping quality going into the market under the Department's official grade certificate. It is important that the buyers of our creamery butter should feel that any lot covered by grade certificate is a safe and satisfactory product to handle.

The following table indicates the number of moisture tests made during the past two years.

		1919		1920	
Percent of moisture		Lots tested	Per cent.	Lots tested	Per cent.
11.0	12.9	78	2.9	65	.7
13.0	13.9	332	12.2	354	4.2
14.0	14.9	1,085	10.0	2,531	30.1
15.0	15.9	1,082	39.8	5,047	59.9
16.0	16.4	121	4.4	346	4.1
16.5 plus		21	.7	83	1.0
Totals		2,719	100.0	8,426	100.0

Of 8,255 churnings of butter handled through the grading stations last year and reported by the manufacturers to have been made from pasteurized cream 8,196, or 99.3 per cent., gave no reaction when submitted to the Storch Test and were passed as "effectively pasteurized."

SUMMARY OF THE GRADING OF CREAMERY BUTTER

Season	Cream- eries	Lots graded	Representing in pounds	Special grade %	First grade %	Second grade %	Off grade %
1915 (6 months)	35	6,203	3,600,900	33.0	39.7	24.3	3.0
1916 (6 months)	35	6,953	4,214,312	43.9	41.7	12.9	1.5
1917 (6 months)	37	7,046	4,644,646	56.3	36.3	6.7	.7
1918 (6 months)	36	7,281	5,427,134	50.4	38.6	10.3	.7
1919 (6 months)	44	8,939	6,830,308	29.7	50.8	18.9	.6
1920 (12 months)	45	8,512	6,120,325	19.0	55.6	24.7	.7

It will be seen from the foregoing table that there has been a gradual decrease in the percentage of Special and a marked increase in the percentage of Second grade of butter handled through the Department's Butter Grading Stations since the season of 1917. This deterioration is, of course, primarily due to a larger percentage of poor grade cream having reached the creameries either from patrons directly or through some of the numerous cream buying agencies (Cream Stations) situated throughout the principal dairy sections of the province. It is true that the small "spread" in the prices that have been realized during the past few years for the different grades of butter may not have seemed sufficient to induce the production and delivery of high grade cream especially during the time when it was often found difficult to secure sufficient help to do the work on the farm. During a period of relatively high prices for butterfat a matter of two or three cents more per pound constitute but a small percentage of the price and would not perhaps be a sufficient compensation for the extra time and attention required in the production of cream of a high grade. There is every indication now that in the immediate future at least the market price of second grade butter will be considerably lower than the price of high grade butter and that the differential which the market will be willing to pay should be a strong inducement not only to the creameries but also to the cream producers themselves to produce a higher percentage of high grade cream and butter.

On the other hand, there is no doubt that many of the cream buying agencies are poorly equipped to handle to best advantage the cream which they receive from the farmers. Lack of cooling material and equipment and sometimes delayed shipments results in the development of considerable acidity and flavors which put the cream out of the class required for making Special and First Grade butter. I fully anticipate as already stated that marked conditions for the immediate future will to a very large extent correct the disabilities which have just been pointed out in connection with the buying of cream by creameries.

I need scarcely add that the conditions described above are not by any means peculiar to this Province nor indeed to the Dominion. So far as I can gather it is a world-wide condition and judging by events recorded in the public press there will be a determined effort made by every butter exporting country to get back to first principles where quality production will be recognized and suitably awarded in the world's markets.

INSTRUCTION WORK

During the past year the following members of the staff of this Branch have acted as Instructors in the several Provincial Schools of Agriculture: H. S. Pearson, Geo. W. Scott, W. J. Beckett, A. N. MacDonald and W. Hamilton (the latter left the service of the Department at the end of March). A number of public meetings have also been held and addressed by members of this staff relative to dairy questions in general.

Respectfully submitted,

C. P. MARKER,

Dairy Commissioner

REPORT OF THE PROVINCIAL VETERINARIAN

SIR.—I have the honour to submit herewith the annual report of the Provincial Veterinarian's Branch of the Department of Agriculture for the year 1920.

There has been little change in the work of this branch during the past year. It is a satisfaction to be able to state that the health of the live stock in this province is exceptionally good. Various outbreaks of disease have occurred in different sections of the country throughout the year, but the extent of the trouble has been limited to particular areas.

EDUCATIONAL WORK

Lectures on Veterinary Science given at the Schools of Agriculture consist of practical demonstration of the examination of horses for unsoundness; lectures upon the care and treatment of sick animals; the different methods of treating wounds, such as barb wire cuts; and special instruction upon subjects relating to parturition, care of foals, and colt troubles. This work is given at the different Schools of Agriculture viz: Gleichen, Olds, Claresholm, Raymond, Vermilion and Youngstown by Drs. McPherson, Moore, Buchanan, Davis and Moon; lectures on contagious diseases and data gathered through experimental work are given by the Provincial Veterinarian.

Veterinary instruction is given also to the Agricultural students attending the University. The course is more advanced than that at the Schools of Agriculture but along similar lines. By such lectures it is the aim to familiarize the students in the Faculty of Agriculture with diseases affecting the live stock of Alberta, in the hope that they will be able to do much in the prevention and eradication of disease in the province. A number of requests for meetings in different parts of the province have been received during the past year, and it has been the aim to attend as many as possible especially in districts where the services of a qualified veterinary surgeon are not obtainable.

LIVE STOCK DISEASES

Blackleg.—We are pleased to report that there has not been as great loss reported during the past year as heretofore. This may be due to the fact that the general use of the Aggrassin Blackleg Vaccine is becoming much more general. The fact that the Schools of Agriculture always keep it on hand for the convenience of the stockmen and continually advocate its use to the students at the schools is steadily increasing the demand for it. So far no bad results from its use have been discovered. It apparently produces a marked state of immunity and it has been found that one dose is sufficient to protect almost indefinitely cattle four months old and over. The branch has no hesitation in recommending it as a safe and most efficient vaccine. It gives almost absolute protection.

Gastro-enteritis.—This disease as given in our 1919 report assumed during that year an alarming aspect. The heavy loss occurred no doubt from the fact that stockmen were extremely short of feed and as a result many were forced to feed foodstuffs lacking in nutrition, consequently the cattle were not in a condition to withstand the onslaught of an epidemic of any kind. Fortunately, however, the fall of 1920 has been particularly beneficial for live stock of all kinds and with the exception of half a dozen outbreaks it has apparently died out. We have had no further opportunity to work out a better line of treatment than the one we used last year. The providing of warm, comfortable quarters, the administering of either boiled milk, oatmeal gruel, rice water and linseed tea aided in keeping up the strength of the animal. Medicinally we used tannic acid in one dram doses three times a day. On certain cases we derived better results from tincture of catechu one dram three times a day or sub nitrate of bismuth one to two drams a day. We are satisfied that a large proportion of the cases which appeared last fall on account of the mildness of the type could have been successfully treated by following out the above suggestions provided that the animals were taken when the symptoms were first noticed.

EXPERIMENTAL WORK

It is a satisfaction to be able to inform you that our experimental work on contagious abortion and on sterility affecting cattle has progressed favorably. The branch has been somewhat handicapped by not having proper facilities to carry on certain work but this difficulty will be overcome shortly. The following gentlemen have rendered valuable assistance in carrying on this work: Mr. H. A. Craig, Deputy Minister of Agriculture, Edmonton. Mr. Craig has been of every possible assistance and without his co-operation many of the experiments would have been impossible. Mr. G. H. Hutton, Superintendent of the Agricultural and Animal Industry Branch of the Canadian Pacific Railway, Department of Natural Resources, Calgary, has been untiring in his efforts to help experimental work along these lines. The non-breeding cows on the Strathmore Canadian Pacific Railway Farm were placed at my disposal and through access to them I was able to gather much valuable information. Dr. Colin McPherson of the Stallion Inspection staff has also given valuable assistance in these experiments. Dr. Smith, Dominion Veterinary Inspector in charge at Gainers' Plant, Edmonton, has assisted materially in the work on sterility and especially on ovarian diseases. The following on contagious abortion contains a summary of our work in connection with this disease:

Contagious abortion. There are probably few diseases attracting as great attention at the present time as contagious abortion in cattle, and with the exception possibly of tuberculosis, none have proved so disastrous to the live stock industry. For several years we have been carrying on experiments in eradication and control with varying results, and have been trying likewise to use other sources of information. It was not until October 1919 that we had an opportunity to visit Cornell University where a great deal of valuable information was secured from Dr. W. L. Williams of the Department of Obstetrics and Research in

the diseases of breeding cattle at that institution. Dr. Williams is probably one of the best authorities on this subject in America, and although he has many who question his theories it must be said that through information secured from him the Veterinarian's Branch has been able to achieve excellent results.

We have been handicapped heretofore by the difference of opinion as to the cause of contagious abortion, some insisting that along with sterility it is caused by granular venereal disease or infectious vaginitis, others claiming it is due to a short bacillus called *bacillus abortus*. As to the avenue of infection there is also a disagreement. Some are positive that invasion is usually if not always through the cervical canal and that it may cause abortion, premature birth, or metritis. These advocates show where the cervical canal becomes sealed in from 30 to 60 days after the cow becomes pregnant, and invasion of the organism must take place before this occurs. Many are certain the invasion is taken in by the food, that it multiplies in the alimentary tract where it may be taken up by the blood or lymph stream and carried to the uterus or passed through the uterine seal. Dr. Williams who advances the former theory admits that it may be taken into the alimentary tract by milk or food, but states that it may be expelled with faeces, adhere to the tail and vulva, and that infection finally extends into the vagina and cervical canal to the uterine cavity. Men who support this theory of infection state that if the organisms enter the uterus from the blood stream of the mother we would naturally expect to find it appear and spread at any point of the uterus, but in all cases the infection begins and radiates from the os uteri, indicating that it enters through the cervical canal. Again we find that with sterile cows it would appear that irrigating the cervical canal tends to rid the cavity of infection and induce security against abortion.

The experiments we have carried out are somewhat along the lines suggested by Dr. Williams, but vary according to the severity of the outbreak. We have under observation at the present time a herd in which abortion has caused a great deal of trouble and which we are treating as follows: The cows which are going to the full period of pregnancy are placed in a clean disinfected stall a few days before calving. The vagina, tail and udder are washed with some antiseptic solution daily until the cows calve. On its arrival the new born calf is taken to a clean isolated box stall. If it is to be raised on the dam the vagina, thighs and udder of that animal should be washed with an antiseptic solution each time before allowing the calf to suck. This should be kept up until all discharges from the cow have ceased. If the calf is to be raised by hand the cow should be treated in the same way by thorough disinfection. The milker should always disinfect his hands and should milk into a sterilized pail. When the calf is from five to ten days old it should be fed on boiled milk. When the heifers are of breeding age they should be bred preferably to a bull grown under the same conditions as the females. The cervical canal of the heifer and the sheath of the bull should be washed with an antiseptic solution before breeding.



PERCHERON STALLION OWNED BY DEPARTMENT OF AGRICULTURE

For the general treatment of abortion we are working on the following program with apparently excellent results:

(1) The immediate isolation of all cows which have been aborted.

(2) The careful disinfection of the cervical canal of these cows, at least once a day with 0.25% Lugol's solution until all discharges have ceased.

(3) When the cow comes in heat regularly the cervical canal is washed daily for two days before and three days after coming in season with an 0.25% Lugol's solution. Again in eighteen days the same process is repeated. When bred she is washed daily for twenty-one days with the same solution, and so far we have not had one cow which did not carry her calf to the full term of pregnancy.

For cows in the same barn which have not aborted we have been using the familiar application of corrosive sublimate one dram, dissolved in water adding this to one ounce each of alcohol and glycerine. These ingredients are shaken up in one gallon of water and applied daily to the vulva and root of the tail with a soft sponge.

As to curing sterility in cows we have had considerable success and are satisfied there is a great field for this work. Treatment of this kind, however, should be done by competent veterinarians who have devoted some time to this special problem, especially so when there is ovarian trouble.

THE STALLION ENROLMENT ACT

The applications for inspection of stallions were not so numerous during this year as in the previous two years, but came from places in almost every part of the province which made it necessary for the inspectors to cover a wide range of territory. There were not so many stallions imported in this as in previous years, probably on account of difficulty in obtaining good horses at reasonable prices.

In connection with the enrolment of stallions a large number of pedigree certificates presented were not recorded at Ottawa in the names of owners. Many of these were put in proper order, but in some cases where this could not be done before enrolment certificates were required interim enrolment certificates were issued until such time as the pedigrees could be properly recorded as required by the Act. As the Act stipulates the inspection of stallions every third year until the age of nine years is reached, it will be necessary during the coming year to inspect most of the stallions that were first inspected in the year 1918.

Following is a summary of the enrolments for the year 1920:

Clydesdale	387
Percheron	471
Shire	42
Suffolk	19
Belgian	109
Standard Bred	9
Thoroughbred	4
Hackney	2
French Coach	1
Morgan	1
Total	1,045

DEPARTMENT OF AGRICULTURE

Interim Enrolment Certificates Pure bred	315
Grades	204
Interim Enrolment Certificates Grades	75
	<hr/>
	1,639
	<hr/>

Respectfully submitted,

P. R. TALBOT,

Provincial Veterinarian.

REPORT OF THE SEED AND WEED BRANCH

SIR,—I beg to submit the report of the Seed and Weed Branch of the Department for the year 1920.

The work of the Branch during the year 1920 included the supervision of weed inspection work, field crop competitions, good farm competitions, local seed fairs, distribution of seed grain and feed under the 1920 Seed Grain Act, collection work in connection with former seed grain distributions, and general educational work along the most necessary and practical lines. Also considerable work in connection with the free transportation of haying outfits, live stock and feed in connection with the relief work of the fall of 1920 was handled by this Branch.

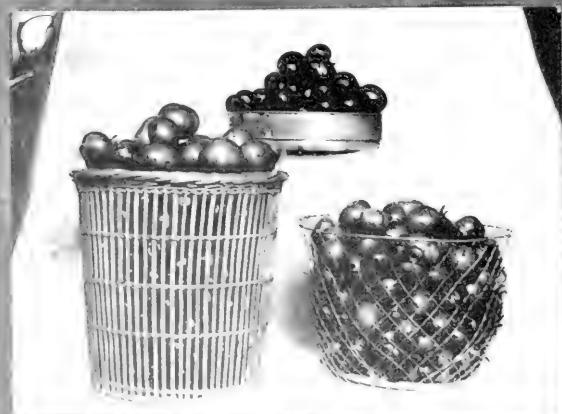
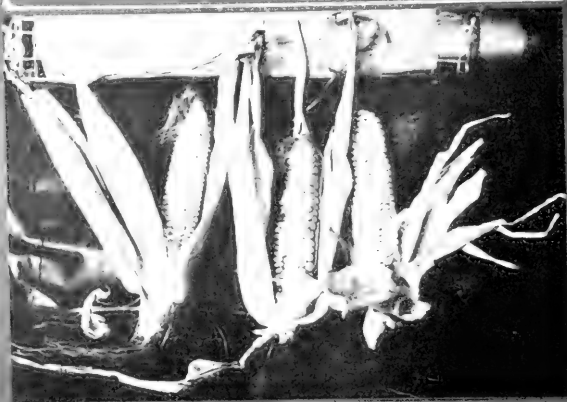
NOXIOUS WEED INSPECTION

During the year 1920 there were 28 local weed inspectors appointed. The following are the names and addresses of these inspectors:

Archibald, A. R.	Cardston
Burdette, Thos.	Bassano
Bolinger, Marcellus	Gleichen
Crowe, E. W.	Cochrane
Coulen, Arthur	Jumping Pond
Grady, L. T.	Warner
Gillies, Archie	Bowell
Hopewell, Ed.	Cardston
Heggie, George	Raymond
Head, Jasper J.	Magrath
Henderson, R. R.	Taber
Haines, L. A.	Lethbridge
Hallowell, John	Thelma
Huggins, Fred J.	Brooks
Irwin, E. L.	Claresholm
Lynn, Ed.	Albion Ridge
Murray, George	Whitla
Musson, T. G.	Medicine Hat
MacLean, Alex.	Barons
McDougall, Dan	Winnifred
Niddrie, John	Edmonton
Patterson, Robt.	Taber
Reis, D. S.	Masinasin
Robinson, H. L.	Eyremore
Sohey, Ed.	Alderson
Scott, Frank	Gleichen
Thompson, M. S.	Pendant D'Orielle
Wheaton, Guy	Acadia Valley

These inspectors were given such areas as it was thought they were able to handle successfully and the dates of their appointments were arranged as near as possible to meet the conditions which exist in their respective districts. In cases where winter annuals were prevalent, such as stink weed and tumbling mustard, the appointments were made earlier than in districts where annuals or perennials were prevalent. These inspectors were kept on duty until such time as it was felt that they could be of little further use, because once a farmer has started harvesting and the majority of weeds that are left have gone to seed, there is very little use carrying on the inspection work.

DEPARTMENT OF AGRICULTURE



ALBERTA-GROWN CORN AND TOMATOES

LEAN CROPS

From reports received from the different local weed inspectors last year's campaign cannot be considered as entirely satisfactory. The spring opened up very late followed by a very quick growth which did not give the inspector time to locate the weeds and the owners before these weeds had almost gone to seed. Then again following this the season changed to one of extreme drought and high winds. This matured the weeds faster than expected and also had the effect of discouraging the farmer from taking any active steps to eradicate the weeds. It also must be remembered that for three years previous in a great part of the weed infested area the farmers had very little crop and as is well known, had been depending a good deal on the Department for seed grain and feed for their horses. Such conditions one can realize make it practically impossible for the weed inspector to force the farmer to destroy his weeds, especially when the incoming crop did not look too prosperous. It was often found when the local inspector approached a farmer he was simply told that he could not destroy the weeds on his land as he had neither feed nor money, besides the land was too hard and dry for summer-fallowing.

Again, the above mentioned loss of crop for three years had the result of leaving a large number of unlocated quarters throughout the district which were more or less badly infested, especially with Russian thistle and tumbling mustard. These quarters were so numerous it was practically impossible for the local inspector to engage help to have the weeds destroyed or for the Department to undertake to pay for such work. Besides, the cutting and burning of tumbling mustard is not in any way a satisfactory means of destroying it as it often happens when you have it cut and burned a shower will come and inside of three weeks you have a second crop just as strong as the first one. With respect to tumbling mustard this Branch is thoroughly convinced that the proper method of handling the weed is to plow and cultivate throughout the season or sow to some feed crop.

RUSSIAN THISTLE

Russian thistle has made a very rapid headway during the last three or four years. This is due of course to the peculiar climatic conditions under which this weed thrives. Its habits of growth are similar to those of the cactus inasmuch as it will thrive best when the soil is too dry to produce grain crops, hence anyone familiar with the conditions in the area in which these weeds have flourished will understand that there cannot help but be a tremendous encroachment of this weed in the last three or four years. This weed will disappear considerably if wet years come under which conditions the plant does not thrive well, or if crops grow sufficiently to keep it in check until after the crop is harvested. It has been found that plants that have grown to maturity after the crop has been harvested have been frozen before they produced their seed, therefore the propagation of the weed has been considerably checked. Russian thistle is an annual and very easy to eradicate if it is handled at the proper time, and it is believed that if the farmer, when sowing

land infested with this weed, would sow a little extra seed and then harrow the grain when it is from three to six inches high, he would destroy a great many of these weeds, at least to the extent that the balance would not have the effect of choking out the crop. Young Russian thistle is a very weak plant when small and the harrow tooth will destroy it readily.

CANADA THISTLE

Canada thistles are increasing very rapidly in all parts of Alberta with the greatest increase in the Southwestern part, and from observations made, together with the reports of the local weed inspectors and the officers of the rural municipalities, it is evident that a more serious campaign against these weeds must be undertaken if it is hoped to keep them in check. Canada thistle is perhaps the worst weed that Alberta has to contend with and unless some drastic measure is taken to keep it in check large areas of certain parts of Alberta will become valueless. It was found last year that these weeds were not even cut before they had gone to seed, which allowed the seeds to blow for miles, and it is regrettable that the farmer will not at least cut these weeds. This will not eradicate them but it has the effect of not allowing them to propagate by seed. Canada thistle is a perennial which means that it must be eradicated by surface cultivation and this cultivation should be made by a broad-sheared implement that will run beneath the surface of the ground to a sufficient depth to cut the underground root stocks and bring them to the surface where they can be raked off or killed by the heat of the sun. Where soil has a tendency to drift when surface cultivation has been used it will be found that by using such implements as the broad shear, duck-foot cultivator or rod weeders these implements will bring such clods as are available to the surface of the soil and will not allow the surface of the field to smooth out to permit drifting. Cultivating the land with these implements up to the first of June and seeding to some smother crop or inter-killed crop will have a good effect for the balance of the year.

Perennial sow thistle is not very prevalent in the province yet, but is gradually working its way in, and the Department strongly recommends that when patches of it are found the farmer should immediately undertake to dig these patches out, and if they wish to make use of the land, plant it to potatoes where they can be hoed at least once a week. The Department has at different times sent out weed bulletins and large colored posters of the perennial sow thistle and Canada thistle so that the farmer may be familiar with these plants and be in a position to practically cultivate them out.

FIELD CROP COMPETITIONS

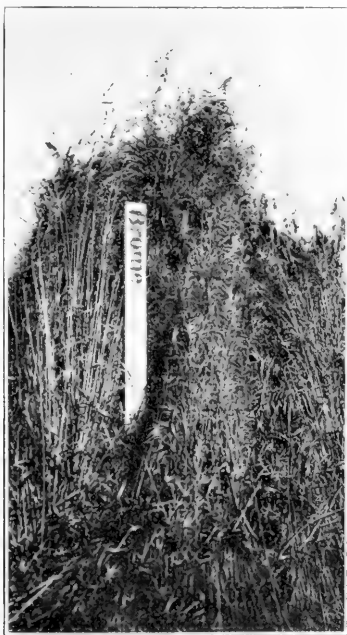
The number of Field Crop Competitions held during 1920 was only four, the year being an unfavorable one for such competitions. A large number of Agricultural Societies which had every intention of holding these competitions cancelled their arrangements in the middle of the growing period. However, from the judges' reports of the four

competitions held, it was found that the rules, regulations and principles of these competitions were all that could be desired and that the Agricultural Societies were pleased with the educational results. The competitions were held as follows :

Society	Date	Judge
Sedgewick	Aug. 4-7	E. R. Rasmuson
Stony Plain	Aug. 19-20.	G. D. McMillan
Lacombe	Aug. 5-13	J. M. Clark
Munson	Aug. 17	E. R. Rasmuson

LOCAL SEED FAIRS

These Fairs which are carried on by the different Agricultural Societies have proven successful in every respect. The total number held during the winter of 1920-21 was 27. This number was nearly double that held during the winter of 1919-20, which indicates in itself that the year 1920 was a much better seed producing year than that of 1919. It is also encouraging to receive reports from the different judges who act at these Seed Fairs to note that there was not a poor Fair held



A STOOK OF BROME GRASS

during this season. It is evident that the number of exhibits had greatly increased over that of previous years and that the quality of the exhibits was much better. From the 27 reports of judges only one or two reported evidence of wild oats or other noxious weeds. This in itself is a great improvement over such reports of five or six years ago when nearly fifty per cent. of the exhibits were found to contain noxious weeds. Smut seems to have practically disappeared in the samples exhibited at these Fairs.

The Fairs appear to be well arranged and looked after by the secretaries of the Societies and all detailed information was prepared for the judges when they arrived. There was also more registered seed exhibited which is encouraging, and the only criticism that could be made at some of these Fairs was that they had offered and paid prize money for feed grains, especially feed oats. This does not comply with the purpose of these Fairs and the grants which the Department is paying to assist such competitions. These Fairs should be carried on exclusively as seed grain exhibits, as it is to encourage the production of good seed and not feed that this work is carried on. It is also recommended that Agricultural Societies should notify the farmers in their district in the spring, if possible, that they intend to hold a Seed Fair during the coming fall. This would give the farmer an opportunity to seed, care for and produce good grain for the competition coming. The same may be said of the Field Crop Competitions. The following is a list of Seed Fairs held in the fall of 1920 and the winter of 1921, with the dates and names of judges:

Society	Date	Judge
Provost	Dec. 16, 1920	E. R. Rasmuson
Rowley	Nov. 30, 1920	W. J. Stephens
Oyen	Dec. 15, 1920	W. S. Jacobs
Brooks	Nov. 10, 1920	A. S. Blackwood
Raymond	March 5, 1921	O. S. Longman
Lake Saskatoon	Feb. 10, 1921	G. M. Stephen
Magrath	Dec. 16, 1920	H. Mackintosh
Busby	Dec. 21, 1920	E. R. Rasmuson
Leduc	Dec. 7, 1920	J. M. Clark
Lacombe	Dec. 22, 1920	Prof. Cutler
Imperial	Dec. 16, 1920	G. F. H. Buckley
Bowden	Dec. 15, 1920	G. F. H. Buckley
Viking	Nov. 30, 1920	J. M. Clark
Vegreville	Feb. 17, 1921	J. G. Taggart
Munson	Dec. 1, 1920	W. J. Stephens
Vernon	Jan. 22, 1921	J. G. Taggart
Colinton	Dec. 9, 1920	T. Fletcher
Sedgewick	Dec. 4, 1920	Prof. Sandford
Imperial	Feb. 25, 1921	Prof. Sandford
Lloydminster	Feb. 21, 1921	Prof. Sandford
Loughheed	Jan. 14, 1921	E. R. Rasmuson
Daysland	Feb. 11, 1921	J. M. Clark
Irma	Feb. 2, 1921	G. F. H. Buckley
Chauvin	Feb. 26, 1921	J. M. Clark
Camrose	Feb. 5, 1921	J. F. Fryer
Lonsdale	Feb. 18, 1921	E. R. Rasmuson
Wetaskiwin	Jan. 25, 1921	J. R. Fryer

THE PROVINCIAL FAIR

The Provincial Seed Fair held in Calgary, February 14th to 18th, was considered one of the best ever held in this province. The whole exhibit was large, wheat being much in evidence. Oat exhibits were extra good but the number of exhibits smaller than expected. Barley and rye were extra good. Peas were average. Potatoes were average, while grass seeds, clover seeds and corn were better than ever before. The exhibits came from nearly all quarters of the province and the prizes won were spread over the entire area. The quality of all exhibits was good in this respect, being equal to those shown at the Local Seed Fairs. The total of cash prizes offered at this Fair was \$2,300, of which \$1,543 was claimed by competitors. Also \$100 worth of special prizes were donated by some of the different business men of the city of Calgary, which were all claimed by exhibitors. These special prizes help materially to improve this Fair and the Department appreciates it fully and herewith acknowledges its debt to the donors.

INTERCHANGE AND GERMINATION OF SEED

A report compiled from the returns of the different local seed fairs held by the Agricultural Societies, together with the report of the Provincial Seed Fair, was distributed throughout the province so as to assist the farmer who is anxious to secure good seed grain from some other farmer at cost price. This report gave the prize won, the amount of such grain for sale and the price, and judging from the demand which is made for this report, the Department was justified in the expense and feels that it has helped the farmers in a large number of cases to secure at more reasonable prices better seed than they had at home. In this report the Department has also strongly advocated that germination tests should be made of all seed before it is sown. It describes the simple home methods of making germination tests and also states where farmers may send their seed for such tests. Seed testing cannot be too strongly recommended and no farmer in Alberta can afford to sow seed without first having such a test. It is also strongly recommended that when farmers purchase quantities of seed from other farmers or seed houses that they retain a reasonably large sample of such seed so that they can hold evidence as to what they have purchased because often a farmer will buy a certain variety of grain and it is difficult for him to tell that he has received what he was supposed to have purchased until the grain comes out in head. Also a good principle is never to buy seed without first securing a sample.

SEED GRAIN DISTRIBUTION

During the spring of 1920 it was found necessary to offer further distribution of seed grain, together, in some instances, with feed oats and hay. The area which called for this assistance was practically the southwestern portion of the province, there being very little crop in that area for two or three years, and it was found that the farmers needed this assistance, otherwise no crop would have been put in. This seed grain distribution was authorised by the Seed Grain Act of 1920 and

under this Act the total distribution of seed grain was \$819,108.59. This money paid for approximately the following bushels: Wheat 236,349; oats 201,426; barley 5,021; rye 1,778. The total amount of the above mentioned was distributed of course in the unorganized districts. The rural municipalities made their own provision for seed grain distribution. The distribution of this grain was handled during the months of March, April and May for the wheat, oats and barley while that of the fall rye was made during July and August. The details of this work were handled by Mr. J. M. Clark, of the Seed and Weed Branch, and the rural distribution work was handled by some twenty men who covered the affected area under the direction of Mr. Clark. When the work was completed it was found that everything had worked out without any trouble whatever and a great deal of credit is due Mr. Clark for the systematic and business like way in which this work was handled.

COLLECTIONS

The collections on the distribution of seed grain from 1917 to 1921 do not show very good returns, notwithstanding that every effort was made both by the Department and the banks who were carrying the notes, but nothing better could be expected when the crop conditions in the area where this distribution was made were taken into consideration, the farmers not having had a successful crop so that they could clean up their obligations entirely. The total distribution for 1917-18-19-20 and the amounts collected up to January 31st, 1921, are as follows:

1917 distribution	\$ 39,713.53	Amount collected	\$33,591.54
1918 distribution	63,163.97	Amount collected	15,180.47
1919 distribution	433,644.92	Amount collected	32,758.14
1920 distribution	\$19,108.59	Amount collected	60,986.53

The above statement leaves a balance to collect, after January 31st, 1921, of \$4,183,113.43.

Respectfully submitted,

J. D. SMITH,

Superintendent.

REPORT OF THE POULTRY BRANCH

SIR:—

I beg to submit the following report of the Poultry Branch for the year 1920.

EGG AND POULTRY MARKETING SERVICE, EDMONTON

The business transacted by the Edmonton Branch of the Egg and Poultry Marketing Service has shown a steady increase during the year 1920. Two car loads of eggs were sold to Messrs. Gunns Limited of Toronto, for shipment to Great Britain, with good results. The remainder of the stock in cold storage was disposed of to the leading local produce houses during the months of November and December at prices favorable to the Marketing Service. Business with the smaller produce houses, stores and cafes has also been developed, which has done away with the necessity of placing fresh eggs, purchased at a comparatively high figure, in cold storage.

The system of grading all eggs and poultry and of making payments according to grade has been strictly adhered to throughout the year. The total purchases of eggs for the year 1920 as from Jan. 1st. to Dec. 31st. was \$34,372.15 as against \$1,874.96 for 1919, representing an increase of \$32,497.19. The purchases of poultry for the year 1920 amounted to \$7,990.04 as against \$2,277.22 for 1919, representing an increase of \$5,712.82. The egg receipts for 1920 were 72,289 dozens compared with 4,632 dozens in 1919. The poultry receipts for 1920 were 46,423 lbs. compared with 8,001 lbs. in 1919.

	1919	1920
No. of points shipping	36	88
No. of Egg Circles shipping	6	27
No. of individual shippers	62	171

The prices paid to farmers and shippers have frequently changed in the same month. The figures given below represent the average prices for each month.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Extras . . .	74	69	46	42	47	42	46	54	62	65	70	70
Ones . . .	67	64	43	39	44	40	43	50	57	59	66	66
Twos . . .	57	59	41	34	36	34	39	43	48	50	55	55

Plans have been under consideration, and are to be put into operation next season for the fattening of part of the poultry received.

EGG AND POULTRY MARKETING SERVICE, CALGARY

The business transacted during 1920 has shown an increase over that of 1919. In conjunction with the Edmonton Branch three car loads of eggs were shipped to Toronto for export to Britain. The balance of eggs in cold storage was sold to local dealers at satisfactory

prices. The quality payment system has been carefully followed throughout the year. The elimination of store-keepers who were purchasing eggs outright has had the tendency to slightly reduce the number of shippers on our books.

The purchases of eggs for the year 1920 amounted to \$10,014.86, compared with \$28,548.41 for the year of 1919. The poultry purchases for 1920 were \$9,385.23, a slight decrease of \$62.18 compared with the year 1919. The egg receipts for 1920 were 96,619 dozens an increase of 19,320 dozens. The poultry receipts for 1920 were 63,912 lbs. as against 68,159 lbs. received during 1919.

	1919	1920
No. of Points shipping	118	105
No. of Egg Circles shipping	40	41
No. of individual shippers	275	303

The following are the average prices paid to farmers and shippers during the year 1920.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Déc.
Extras	70	65	45	47	47	42	45	53	59	63	65	70
Ones	65	59	43	43	43	39	42	48	55	57	59	65
Twos	50	48	40	33	34	35	32	34	47	50	50	55

The statements given below represent the total business transacted by the combined Edmonton and Calgary Branches of the Egg and Poultry Marketing Service. An appreciable increase will be noted for 1920 as compared with 1919.

—1919—

Calgary Branch

Eggs handled	\$35,828.85
Poultry handled	22,687.12

Edmonton Branch

Eggs handled	2,259.70
Poultry handled	3,237.64
	— — —
	\$64,013.31
	— — —

--1920--

Calgary Branch

Eggs handled	\$50,262.44
Poultry handled	11,256.88

Edmonton Branch

Eggs handled	43,110.42
Poultry handled	10,923.88
	— — —
	\$115,583.62
	— — —

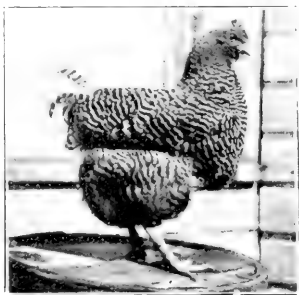
The following is a list of the points where egg circles have been organized and are making regular shipments to the Egg and Poultry Marketing Service at Edmonton or Calgary.

Bawlf	Carstairs	Darwell
Ballantine	Castor	Dalemead
Bindloss	Cayley	Dorencee
Blackie	Chauvin	Doley
Camrose	Compeer	Edgerton
Carmangay	Coronation	Egremont

Forestburg	Lacombe	Rosyth
Galahad	Leduc	Round Hill
Gadsby	Loyalist	Ryley
Glenevis	Lamont	Savoy
Gunn Siding	Lac. St. Anne	Sedgewick
Gwynne	Meeting Creek	Sylvan Lake
Haynes	Metiskow	Stonelaw
Hayter	Meadow View	Throne
Hespero	Nanton	Tofield
High River	Nightingale	Vermilion
Irma	Obaton	Veteran
Irvine	Opal	Viking
Islay	Parkland	Wainwright
Jarrow	Red Deer	Waskatenau
Junkins	Ribstone	Westlock
Jenner	Rochester	Vegreville

PROVINCIAL POULTRY PLANT

The branch is able to report another successful year in connection with the operation of the Provincial Poultry Plant. A good egg yield has been maintained notwithstanding the severity of the winter of 1919-1920. A special effort was made during the year 1920 to demonstrate to the farmers of the province the practicability of all the year round egg production. There exists in the minds of some farmers and poultry keepers in Alberta an impression that our winters are too severe for profitable egg production and that on account of this disability poultry keeping cannot be followed with the same degree of profit as elsewhere. The Management of the Poultry Plant has just completed a test which demonstrates beyond question that when breeding, feeding and management are properly conducted, nothing need interfere with all the year round egg production. The results show that in spite of severe weather conditions, profitable production can be maintained. In fact, a select pen of Barred Plymouth Rocks, in a period of twelve months, including the severe winter months of 1919-1920, exceeded all previous records.



PULLET NO. 11

Laid 261 eggs in 12 consecutive months
Dec. 1st, 1919 to Nov. 30th, 1920 at
the Provincial Poultry Plant.

There were twenty-four pullets in this pen, and the production was as follows:

EGG RECORD—24 BARRED ROCK PULLETS—12 MONTHS

December 1, 1919 to November 30, 1920

Hen No.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Totals
7	24	20	2	25	27	17	24	17	18	11	24	19	228
8	24	19	17	20	25	26	26	16	23	18	16	0	230
9	22	22	4	26	28	29	23	15	27	15	18	18	247
10	20	16	4	19	24	26	24	24	23	23	17	0	220
11	24	25	22	25	28	18	20	23	19	16	21	20	261
12	19	14	10	14	19	24	20	17	18	20	23	16	214
13	20	21	17	23	19	20	21	18	14	20	16	6	215
14	6	13	12	20	24	24	21	24	22	22	14	0	202
15	17	23	3	22	8	19	17	16	15	14	14	2	170
16	22	28	18	13	21	18	20	16	14	20	0	21	211
17	19	8	11	12	16	15	17	14	16	14	13	3	158
18	23	23	11	18	23	25	23	24	20	19	13	19	241
19	10	15	7	22	21	24	25	23	23	20	11	0	201
20	1	6	5	15	16	14	14	13	15	10	0	0	109
21	14	23	10	26	23	26	23	22	21	17	0	0	205
22	7	4	15	24	19	19	14	12	15	13	8	22	172
23	18	3	0	18	22	17	15	15	14	11	8	0	141
24	17	20	6	19	24	18	25	15	16	27	26	12	225
25	15	11	0	11	20	22	23	23	14	11	0	0	150
27	21	19	4	21	22	24	17	20	18	20	14	0	200
28	11	14	5	21	21	16	13	11	13	8	0	0	133
29	21	18	8	23	9	18	15	12	18	10	5	14	171
30	7	8	7	9	17	14	12	11	13	16	7	0	121
31	19	21	18	11	17	15	11	12	14	8	6	0	152
On Floor	9	0	0	2	3	1	7	1	3	1	2	0	29
Total	410	394	216	459	496	489	470	414	426	384	276	172	4,606

Average for 12 months 191.9 eggs per bird.

The following statement shows the expenditure and revenue in connection with the test of the 24 trap-nested Barred Rock pullets.

Total cost of feed for 12 months	\$ 91.61
Average cost of feed per hen for 12 months	3.81
Total number of eggs laid in 12 months	4,606
Average number of eggs laid per bird in 12 months	191.9
Total amount realized on eggs	280.20
Net surplus after deducting cost of feed	188.60
Average net surplus per hen	7.85

The following is a statement of the eggs and of day-old chicks and breeding stock distributed to farmers. The orders were in all cases limited as to the numbers supplied in order to make the distribution include as many farmers as possible. Notwithstanding the limiting of the size of orders we were not able to meet the requirements of all those desiring foundation stock and upwards of three hundred farmers could not be supplied.

BREEDING STOCK

	Male	Female
Barred Rocks	54	55
W. Wyandottes	34	84
S. C. Reds	14	24
R. C. Reds	22	27
Buff Orpingtons	25	30
White Leghorns	16	22
	<hr/> 165	<hr/> 242

EGGS FOR HATCHING

Barred Rocks	1,066
White Wyandottes	361
Buff Orpingtons	468
White Leghorns	418
R. C. Reds	273
S. C. Reds	130
	<hr/> 2,719

DAY-OLD CHICKS

Barred Rocks	435
W. Wyandottes	525
W. Leghorns	466
R. C. R. I. Reds	200
S. C. R. I. Reds	112
Buff Orpingtons	175
	<hr/> 1,913

SCHOOL POULTRY CLUBS

Eggs Supplied for Hatching.

R. I. Reds	666
W. Wyandottes	625
Barred Rocks	725
Buff Orpingtons	52
W. Leghorns	150
	<hr/> 2,218

POULTRY SHOWS

Mr. Shackleton of this Branch assisted in the judging and lecturing at the following poultry shows held in the province: Edmonton, Calgary, Lethbridge, Medicine Hat, Wetaskiwin, Red Deer and Vulcan. Calgary and Edmonton each had an entry list of from 2,000 to 2,500, which is an evidence of the keen interest that is being taken in pure bred poultry. There was apparent at these shows a marked improvement in the quality of the birds of all classes shown. At the larger shows individual birds of local breeding have shown unusual merit and would have given a good account of themselves if shown at the larger continental shows held in Eastern Canada and the United States. Two of the leading breeders of Calgary for the first time competed at the Guelph shows making a creditable showing. Other breeders are rapidly building up a business in utility and exhibition stock covering a field

considerably beyond the boundaries of the province. One Calgary breeder of Rhode Island Reds sold a pullet of his own breeding to an Eastern exhibitor for \$100.00. This bird is reported to have won first in her class at the show in Madison Square Garden, New York.

Respectfully submitted,

J. H. HARE.

Poultry Commissioner.

POULTRY BREEDING STATIONS

Farm Poultry Breeding Stations have been established at the following points in the Province: Cereal, Hardisty, Morningside, Edmonton, Beiseker, Hay Lake and Kircaldy. In all cases foundation stock was supplied from the Provincial Poultry Plant at Edmonton. The following agreement is entered into in connection with the operation of the Breeding Stations.

MEMORANDUM OF AGREEMENT

between

The Poultry Branch of the Provincial Department of Agriculture

and

..... agrees to operate for a period of two years a Poultry Breeding Station, the conditions governing this agreement being as follows:

1. The Poultry Branch agrees to give personal direction and advice in the selection of foundation stock and in the building or remodeling of a suitable poultry house.

2. The Poultry Branch agrees to send its representative to the Station as often as is practicable to personally check the details of feeding, breeding and general management.

3. The Poultry Branch agrees to do all in its power to assist in making the enterprise a commercial success, as well as an effective demonstration to poultry producers in the community.

4. agrees to sell for hatching purposes eggs only from approved matings and for breeding purposes only those birds that have been approved and banded by a representative of the Poultry Branch.

5. agrees, as far as he is able, to follow closely the details of feeding, breeding and general management given by the representative of the Poultry Branch.

6. _____ agrees to keep a record of revenue and expenditure in connection with the operation of the Station and to submit to the Poultry Branch each month a statement of such details.

Dated at _____ this _____ day of _____

192 _____

For Provincial Dept. of Agriculture.

REPORT OF THE COLLEGE OF AGRICULTURE

SIR:

I beg to submit herewith the report of the College of Agriculture for the year 1920.

The enrolment of students in the College of Agriculture for the year 1920 is as follows:

Spring Term -

First Year	--	14
Second Year	--	13
Third Year		6
Special		2
Total	—	35
Special Returned Soldiers	—	137

Fall Term -

First Year		22
Second Year	—	11
Third Year	—	10
Combined	—	8
(Arts and Agriculture)		
Combined (Special)		1
Special	—	3
Total		55
Special Returned Soldiers		7

The Special Course for Returned Soldiers was maintained until the last of June when the attendance fell so low that the Department of Soldiers' Civil Re-establishment decided to discontinue the course. During the Fall Term we have been giving special courses to a few men—seven in number—all that are left desiring agriculture, under the auspices of the S. C. R.

Of our graduating class, six are specializing in Animal Husbandry and four in Soils. It might be interesting to mention that six of these students intend returning to their own farms.

Of the forty-three students who have been taking the degree course during the Fall Term, thirty-nine came from the Schools of Agriculture and four from other institutions. A few show a lack of sufficient elementary training, the rest are quite able to carry on their work. Students contemplating taking this course should be advised to secure as much High School training as possible before entering the University.

Standard courses are given in the Departments of Chemistry, Physics, Biology, Bacteriology, Geology, English and Mathematics. The following is a general report of the departments which may be described as more directly agricultural.

DEPARTMENT OF HORTICULTURE

A limited amount of instruction is given in this subject and some work of an experimental nature is being carried on. The latter has not gone much beyond standard variety tests, cultural tests, and experiments in the utilization of native fruits. There is a great field for service in connection with this Department as the Institution develops.

DEPARTMENT OF POULTRY

Instruction in Poultry was given during the Fall Term. A Lecturer in poultry has been appointed and the development of this department will no doubt be rapid.

DEPARTMENT OF DAIRYING

It is the intention during the coming year to organize and equip a Dairy School.

DEPARTMENT OF FARM ENGINEERING

A Professor of Farm Engineering was appointed during the year. No teaching was done during the Fall Term but preparation has been made to start at the beginning of the New Year, when courses in Farm Building Construction will be given.

DEPARTMENT OF SOILS

This Department has been under way for one year. The students' laboratory is now fully equipped and the research laboratory is also being set up. In addition to the courses given to the students, Dr. Wyatt devoted the summer to getting acquainted with Provincial problems and with people interested in these problems. He made an extended trip to the Peace River District, bringing home many samples which will form the basis of a report on soils of certain areas in the North country. Dr. Wyatt also attended the Irrigation Convention at Lethbridge, following which he accepted the invitation of the C. P. R. officials to visit their different projects. We hope to work in co-operation with the experts in the employ of the Canadian Pacific Railway Company.

DEPARTMENT OF ANIMAL HUSBANDRY

Our Department of Animal Husbandry has made still further progress this year. The new farm purchased for this Department has not been improved because of delay in securing the title. The land already cleared, however, was utilized. Besides the natural increase in live stock, certain additions were made through purchase, chief of which were, a Hereford bull, a small herd of Angus cattle and a pair of Belgian mares. We can report a very successful year as far as health and development of live stock is concerned.

The Department of Animal Husbandry is maintained on an experimental basis. That does not mean that all the pure-bred stock is used for experiments; very little of this live stock is used for that purpose but other animals are purchased, used, and sold, for purposes of feeding and other experiments. The following is a statement in regard to some of the research work now under way:

1. *Feeding Two-year-old Steers for Market.*

For purposes of this experiment sixty two-year-old steers have been divided into ten uniform groups for a five months' feeding test, the object of this test being to secure information on (a) the best type of steer for winter feeding; (b) to compare sunflower silage, oat silage, oat and pea silage, prairie hay and grain; (c) to compare light and heavy grain feeding; (d) to determine whether feeder steers can be profitably fed for markets on Alberta feeds. We have an open mind on this subject as on all other problems and believe that this particular question is one worthy of careful investigation.

2. *Winter Rations for Breeding Ewes.*

The object of this experiment is: (a) to determine the comparative value of alfalfa hay, timothy hay, oat green feed and oat straw; (b) to determine the comparative value of combinations of feeds; (c) to show the comparative effect of feeds on the growth of the fleece and size and strength of the lambs. This experiment has been conducted during the winter of 1920 and will be continued during the coming winter, results to date showing a very striking difference in the feeding value of the roughages. In every case the increase of growth of the fleece was an accurate index of the condition of the ewes and the size of lambs. Complete results have been prepared for the use of sheep producers. At the close of this winter's work a bulletin will be published covering the two years' work.

3. *Silage for Breeding Ewes.*

Six different lots of Ewes are being fed with the idea of determining the relative value of sunflower, oat, and oat and pea silage as a partial substitute for hay.

4. *Feeding Lambs for Market.*

This experiment was carried on in 1919. In 1920 four different lots were fed on the same grain mixtures with different roughages, alfalfa hay, prairie hay, oat green feed. In 1919 the green feed ranked first in economy of gains. The same holds true as a result of the 1920 test. This information is very important because green feed is the cheapest roughage available on most Western Farms. Complete information is ready to be published.

5. *Winter Rations for Brood Sows.*

We have now completed three years' work in comparing different feed combinations for breeding sows. With four years' work available in the spring of 1921, material will be ready to publish a bulletin covering the results of our operations to date.

The question of hairless pigs has been under consideration for some time. Some stations announce that potassium iodide will overcome this difficulty. We do not dispute the point but we are inclined to think that certain feed combinations will prove effective.

6. *Summer Feeding Pigs on Pasture.*

Results of our work in 1918 and 1919 are ready for publication this year. During the summer of 1920 a comparison of forage crops was continued with check lots under dry conditions.

7. *Finishing Pigs for Market.*

During the Fall of 1920 tests were made with eleven lots of pigs to determine the comparative values of oats, barley and wheat for fattening. In view of the fact that protein supplements are very high in price compared to coarse grain, the results of this experiment are very interesting and information is ready for publication in circular form.

8. *Winter Feeding Fall Pigs.*

This is a test on the comparative value of cooked and uncooked feeds during winter feeding. Information will be available in the spring.

9. *Dairy Cattle Records.*

Careful records of feeds consumed and milk or butter-fat produced, have been kept for all cows in the herd since May, 1917. We have valuable information ready for publication. It will be interesting to note that one of our cows holds the three-year-old record for the Dominion of Canada.

10. *Exhibition.*

During 1920 our pure-bred steer demonstration was carried to a successful conclusion by the exhibition at the International Live Stock Exposition at Chicago and the Winter Fair at Guelph, of fourteen steers, bred in Alberta and fed at the University entirely on Alberta feeds. These are the steers which were reported last year as having been presented by breeders throughout Alberta. The names of those who donated them will be found in a detailed statement. Not only have we had this splendid material for class work but, as a demonstration of the types Alberta is capable of producing, this exhibition has been unsurpassed. Our collection consists of seven Herefords, five Aberdeen Angus and two Shorthorns. A brief summary of our winnings in the two shows mentioned may be added:

AT CHICAGO

In the Open Classes we won:

Shorthorns—8th in class of 26.
Angus —3d in calf class.
—5th in junior yearling class.
25 entries.

In Herefords we won:

7th, 10th, 11th, 13th, 17th and 20th places in a class of 47.

In the Clay Robinson Special Junior Yearlings

Any breed or cross, 32 entries, we won: 1st, 4th, and 6th places.

In the Clay Robinson Special, best five of any age or breed.

14 entries, we won second place.

AT GUELPH

In Shorthorns we won first place and Reserve Championship.

In Aberdeen-Angus calves we won first place and in yearlings fifth and sixth places and Championships for the breed.

In Herefords we won the first seven places and Championship.

In herds of three we won: first, third and fourth places and finally won Reserve Grand Championship for the whole show.

These steers were brought back to Edmonton. After being exhibited at Calgary and Edmonton they will be sold. We feel that this effort has been highly successful and will be worth a great deal to the Province.

DEPARTMENT OF FIELD HUSBANDRY.

The work of the Department of Field Husbandry may be considered under two divisions—field crop work and extension work. The field crop work is experimental in its nature, being made up of five classes of experiments in variety testing, tillage experiments, crop rotation, crop management and crop improvement. A brief report on each of these divisions as applied to cereals, forage crops and potatoes follows:

(a) Variety Testing:

In cereals, tests were made of varieties in each class ranging from fifteen to thirty-five in number. Our results for this year would go to show that the following varieties are apparently most suitable to Alberta: Marquis and Ruby Wheat; Banner, Victory, Ligowo, Abundance and Gold Rain Oats; O.A.C. No. 21 and Canadian Thorpe Barley; Alberly Blue Peas, and North Dakota 959 Rye. As a result of extensive tests in forage crops a tentative recommendation as to desirable varieties might be as follows: Grimm Alfalfa, Atlaswede Red Clover; White Blossom Sweet Clover; Northwestern Dent Corn; Western Giant Sun-flowers. Over seventy-five varieties of potatoes have been tested for yield and cooking qualities. Irish Cobbler so far has shown the best results.

(b) Tillage Experiments:

In our tillage experiments twenty different methods were tested on each of wheat, oats, potatoes, roots and corn. Results would indicate that for wheat and oats the best results are obtained by medium early fall plowing followed by the harrow and packer to compact the soil and start wheat growth. For roots and corn it has been found best to double disc the land in the spring followed by harrowing before and after drilling. For potatoes it would appear that deep plowing in the fall followed by shallow plowing in the spring will give best results. If manure is applied the order would be reversed for this district.

(c) Crop Rotations:

This part of the work involved one hundred different rotations, with eight crops, where the same crop was grown continuously on the same piece of land and where each crop was grown after each other crop, so that effects might be determined and satisfactory rotations deduced. Up to date our reports would lead us to suggest that for best

results no crop should be succeeded by one of the same species or kind. A cereal crop should if possible be followed by hoed crop, corn should follow cereals, potatoes do well after corn and all crops do well after peas.

(d) *Crop Improvement:*

Experiments in crop management are being carried out with a view to determining to what extent the date of seeding and rate of seeding can offset the danger from early fall frosts and at the same time maintain yield and quality. In testing for dates of seeding the following standard varieties of each kind of grain were used: Marquis Wheat, Banner Oats, O. A. C., No. 21 Barley (six rowed); Canadian Thorpe Barley (two rowed); Alberly Blue Field Peas; Winter Rye. Our conclusions to date are as follows:

Wheat and Spring Rye—April 12-25.

Peas—April 15-25.

Oats—April 20-30.

Barley—April 25-May 10.

Winter Rye—August 15-25.

In rates of seeding almost the same crops were used and results to date lead us to suggest the following amounts of seed of each crop per acre:

Wheat—2 to $2\frac{1}{2}$ bushels.

Oats—3 to $3\frac{1}{2}$ bushels.

Six-rowed Barley— $2\frac{1}{2}$ to 3 bushels.

Two-rowed Barley— $2\frac{3}{4}$ to $3\frac{1}{4}$ bushels.

Peas— $3\frac{1}{2}$ to $4\frac{1}{2}$ bushels.

Winter and Spring Rye—1 to $1\frac{3}{4}$ bushels.

In wet seasons, heavier seeding might be necessary.

Our work on frost studies was carried on with Spring Wheat, Barley, Oats and Flax. During maturing season accurate weather records were kept and a series of samples covering this period were taken, totalling 489. These samples have yet to be subjected to germination tests, estimates of physical and chemical changes due to frost exposure while maturing will also be made.

Somewhat related to the foregoing is our experimental work to find the earliest stage of maturity at which grain crops may be cut to produce a high quality of seed. Work on this project was conducted during the past season with oats. Our results to date would indicate that oats may be cut for seed purposes at earlier stages than has been previously supposed. The importance of this is obvious.

Our tests with sunflowers would indicate that, because of their greater hardiness and ability to grow at a lower temperature during the early part of the season, sunflowers will out-yield corn.

The tests of silage with crops of corn, sunflowers, oats and peas, buckwheat, alfalfa, winter rye and sweet clover, show the suitability of all these crops for silage.

Experiments in connection with nurse crops for seeding down timothy or clover, involved 400 plots. No report can yet be made.

CROP IMPROVEMENT.

The work in Crop Improvement involves the leading grain and forage crops and comprises different fields of endeavor such as introduction and testing of varieties, head selection and plant selection, pure line selection, cross breeding and effectual pure seed production. Details of this work are given in an appended report but particular attention might be called to the fact that already two new introductions of peas have been made, one of which obtained highest place in the open competition at the Chicago International, and in clover we have a new strain, Altaswede, which gives excellent promise. It might be mentioned that the seed of this latter crop, produced at the University, took eighth place in the open class at Chicago. Already a high estimate can be set upon the value of this clover to agricultural Alberta. Mention might also be made of Flint Corn, evolved from Golden Bantam, which apparently possesses great possibilities as a field corn, especially for the southern sections of this Province. It has been ripened for five years in succession in the Edmonton district.

EXTENSION WORK

(a) *Seed Distribution.*

The Alberta Crop Improvement Association was organized, and this links up the crop improvement and breeding work with the activities of the farming communities. Over 1500 farmers are now enrolled as members of this organization. In all 1422 samples were distributed to farmers for testing. Six seed-growing centers were established in 1920 with a membership of 28, each member being supplied with enough seed to sow one acre.

(b) *Survey of the Native Forage Plants in Alberta.*

This survey was carried out in three ways: (1) by direct survey by members of the staff; (2) by co-operation with Boys' and Girls' Clubs throughout the Province; (3) through the assistance of individual farmers.

Professor Newton visited many districts and collected, identified and mounted, sixty different species of grasses and legumes from districts ranging from Spirit and Swan Rivers in the north, to Bassano, Brooks and Tilley in the south.

(c) *Co-operative Experiments in Potatoes.*

For the purpose of this test the assistance of farmers in the Edmonton district, who belonged to the Edmonton Potato Producers' Association, was enlisted. The co-operative tests for the purpose of estimating comparative yield, cooking quality, and disease resistance, of eight standard potato varieties in eight different localities, were undertaken. Results of the year's work show that for relative yielding qualities, the varieties tested, stand in the following order: Irish Cobbler, Early

Ohio, Wee MacGregor, Early Favorite, Carman No. 1, Prairie Flower, Up to Date, Table Talk. As to cooking qualities, the varieties stand as follows: Early Ohio, Irish Cobbler, Early Favorite, Wee MacGregor, Carman No. 1, Up to Date, Table Talk, Prairie Flower.

Our investigation into diseases would go to show that Scab, Rhizoctonia, Black Leg and Fusarium Wilt are present to rather a disturbing degree. A detailed report will be made later.

The foregoing is a brief summary of the chief lines of work carried on by the Staff of the Department of Field Husbandry, College of Agriculture, University of Alberta.

Respectfully submitted,

E. A. HOWES,

Dean.

REPORT OF THE FARMS AND AGRICULTURAL SCHOOLS

SIR,—I beg to submit the following report of the Farms and Agricultural Schools.

At Claresholm and Olds regular classes were in attendance during the school months of the year. At the Vermilion School fifty war veterans took lectures until the latter part of February. The course was changed somewhat, so that the greatest amount of good could be done for them during their three months' stay at the school. Lessons in cooking were also given to quite a number of them who desired help in this direction. Beginning March 1st, a two-weeks' Short Course was put on at Vermilion. Such subjects as tractors, gas engines, soil cultivation, crops (cereal and forage), stock judging and feeding, poultry and dairying, were taken up. The attendance was quite satisfactory.

During the summer months, experimental and research work was carried on at the three old schools. The School Fair work was again carried on by the schools and the Department of Education, and from forty-six fairs held in 1919, the number grew to seventy-three in 1920.

At the new farms at Raymond, Gleichen, and Youngstown, building operations that had been begun in 1919 were continued, so that these institutions might be ready for students by October 29th.

In April a principal was appointed to each of the new schools. R. M. Scott, B. A., of the Olds Staff was appointed to Youngstown, G. B. Bodman, B. S. A., of the Olds staff to Gleichen and O. S. Longman, B. S. A., of the Claresholm staff to Raymond. Last January, W. J. Stephen, who had been principal for some years at Claresholm, resigned, and J. C. Hooper of the staff was made principal. Mr. Scott and Mr. Longman managed the farms at Youngstown and Raymond well on into the summer until farm managers were engaged. At Gleichen, M. L. Freng took charge of the farm in April. We had a good many instructors to engage and found it necessary to visit Saskatoon, Winnipeg, Guelph, St. Anne de Bellevue and Lansing, Michigan. We have instructors from the Alberta Agricultural College and from the colleges at all of the places named, with the exception of Lansing. The six schools opened on October 29th with a very satisfactory attendance at each.

On the three new farms the main school buildings were completed and the carpenter shop, blacksmith shop and central heating plant, all in one, was erected. We have been using part of the carpenter shops as live stock class rooms. Such equipment as it was absolutely necessary to have was purchased for the shops, laboratories, kitchens, pantries, laundries, nurses' room, etc.

Mr. E. S. Hopkins, who had been stationed at Olds, at the head of soil investigation work, resigned his position at the end of July to

accept a position with the Dominion Department of Agriculture. Part of the work begun by Mr. Hopkins, will be carried on by the agronomists with Mr. F. S. Grisdale, of Olds, directing the work.

At the new farms the following farm buildings were erected:

Raymond—Farm Manager's house, Cow Barn and a portion of an implement shed.

Youngstown—Principal's residence, Farm Cottage, Cow Barn and a portion of an implement shed.

Gleichen—Farm Manager's residence and a granary and implement shed combined.

The old stables and house that were on the Gleichen farm when purchased, are being used, and to accomodate our principal, a house has been rented by the Public Works Department.

No experimental work was carried on at the new farms, but the land intended for plot work was well summer fallowed at each farm. Surplus live stock was sent from Olds, Vermilion, Sedgewick, Stony Plain and Claresholm to stock the new farms.

The full reports of the Principals and the Farm Director follow.

Respectfully submitted,

A. E. MEYER

Superintendent.

REPORT OF THE CLARESHOLM SCHOOL OF AGRICULTURE

I beg to submit the report of the Provincial School of Agriculture, Claresholm.

This report covers the work of the Claresholm School of Agriculture from January 1, 1920 to January 1, 1921.

On October 29th, 1920, the Provincial School of Agriculture commenced work with the following staff:

J. C. Hooper, M. A., Principal, Provincial Biologist, Instructor in Science
G. B. Walker, B. S. A., Farm Manager, Instructor in Animal Husbandry.
O. McConkey, B. S. A., Instructor in Field Husbandry.
W. Lawler, Toronto Technical Institute, Instructor in Mechanics.
G. A. Richardson, B. Sc., (Agr.) Instructor in English and Mathematics.
Dr. C. E. Buchanan, V. S., Instructor in Veterinary Science.
Miss Eleanor Allely, Instructor in Home Economics.
Miss Alice M. Jackson, Instructor in Home Economics.
Miss Anna L. Fennell, R. N., Instructor in Home Nursing.

The following special lecturers gave instruction at the school during the term:



VIEW OF EXPERIMENTAL PLOTS AND FARM, OLDS

Dr. P. R. Talbot, Provincial Veterinarian.
 Dr. C. McPherson, Instructor in Veterinary Science.
 H. S. Pearson, Instructor in Dairying.
 W. J. Beckett, Assistant Instructor in Dairying.
 W. Grant, Instructor in Blacksmithing.
 A. W. Foley, Instructor in Poultry.
 W. F. Stevens, Instructor in Farm Butchering.
 Miss Morkin, Instructor in Home Nursing.

CLOSING EXERCISES IN THE SPRING OF 1920.

Opening address was given by Principal J. C. Hooper. This was followed by an address by E. S. Hopkins, M. S., entitled "What Science has done for Agriculture." Several excellent musical numbers were given by local talent. The diplomas and prizes were then presented by Mr. E. S. Hopkins.

Names of the students who won diplomas in Practical Agriculture in the spring of 1920:

H. M. Baker, Pincher Creek, Alta.
 F. P. Biraud, Claresholm, Alta.
 W. M. Dersch, Macleod, Alta.
 A. H. Edwards, Medicine Hat, Alta.
 J. R. Pierce, Claresholm, Alta.
 M. M. Merrill, Hill Spring, Alta.

Students who won Associate Diplomas in Household Science: Mrs. Wharton (Miss Ida C. Larsen).

Winners of Prizes offered by the Western Retail Lumbermen's Association, Winnipeg, for competition in the Department of Household Science for the best design of a farm kitchen.

1. Miss Velina Stange	\$12.00	3. Miss Nora Mundell	\$4.00
2. Miss Margaret Watson	7.00	4. Miss Viola Hamlyn	2.00

Winners of prizes offered by the Western Retail Lumbermen's Association, Winnipeg, for competition in the Department of Mechanics for the best set of plans for farm buildings.

1. Felix Biraud	\$12.00	3. John R. Pierce	\$4.00
2. Wilfred Backman	7.00	4. Arthur Edwards	2.00

Winners of prizes offered by the Carlyle Dairy Co., Ltd., Calgary, for general proficiency in dairy work at the School of Agriculture, together with an article on the sanitary production of milk.

1. W. S. Backman	\$12.00	3. J. B. Laurie	\$4.00
2. F. P. Biraud	7.00	4. Paul Matsen	2.00

List of students who enrolled in the fall of 1920 for the year's work. First Year Girls:

Agnes Anderson, Parkland
 Jean Burwash, Carmangay
 Christina Buchart, Trochu
 Phyllis King, Lettbridge
 Ruth Lepard, Claresholm
 Ethel Labute, Claresholm
 Ruth McKinney, Claresholm
 Ester Rova, Barons
 Eva Row, Barons

Betty Shaw, Taber
 Gladys Stanford, Stavely
 Melita Schwartz, Champion
 Mildred White, Carmangay
 Florence Warner, Claresholm
 Ora Walker, Claresholm
 Alma Walker, Claresholm
 June Vliet, Gem
 Carine Vadnais, Claresholm

SECOND YEAR GIRLS 1920—1921.

Clara Carney, Claresholm
Viola Hamlyn, Claresholm.

Velina Stange, Champion

FIRST YEAR BOYS 1920—1921

Theodore Anderson, Nobleford
Adam Anderson, Parkland
Arthur Barrows, Milk River
John Brock, Claresholm
Henry Brown, Claresholm
Carl Crawford, Claresholm
William Cook, Claresholm
Robert Ferguson, Stavely
Francis Frey, Pincher Creek
Milford Grice, Claresholm
John Henderson, Claresholm
William Haslam, Wrentham
Douglas Heyland, Claresholm
Herman Holm, Winnifred
Gilbert Hunt, Iron Springs
Sterling Jones, Claresholm
Jack Kirkland, Claresholm
Louis Louchart, Pincher Station
Roy Matthews, Claresholm

Arlow Miller, Stavely
Wallace Miller, Carmangay
Donald MacDonald, Brant
James McGowan, Lethbridge
Joseph Patton, Midnapore
John Porter, Claresholm
John Row, Barons
Fred Smith, Carmangay
James Strang, Claresholm
Lester Stunkel, Claresholm
Clifford Schmidt, Taber
Cyril Schwartz, Champion
Elmer Tronsdale, Claresholm
Earnest Taylor, Cayley
John Taylor, Cayley
John Webb, Blackie
Gerald Wyman, Iron Springs
Edward Wilson, Livingstone
Clair Young, Granum

SECOND YEAR BOYS 1920—1921

Albert Anderson, Nobleford
Herman Anderson, Nobleford
Wilfred Backman, Calgary
Charles Barnes, Granum
Wallace Burnham, Claresholm
Grant Caldwell, Hillspring
Graig Folk, Carmangay
Douglas Gilbert, Nobleford
James Groves, Champion
Louis Groves, Champion
Joseph Heard, Macleod
Adolph Hoeffland, Winnifred
Louis Hicks, High River
Earnest Hansen, Blackie
George Ingram, Turin
Ralph Johnson, Lethbridge

Cyril Kelly, Standard
Charles Leeds, Claresholm
Robert Lange, Claresholm
Paul Matson, Lethbridge
Ralph Macomber, Calgary
John Marrs, Lethbridge
Raymond Perry, Lethbridge
William Penn, Stavely
Russell Riley, Calgary
Frank Smith, Milk River
Lester Snyder, Carmangay
Keith Tester, Calgary
Fred Trowbridge, Claresholm
Malcolm Wallace, High River
Charles Yauch, Langdon

TWO YEARS' INSTRUCTION

The course at the School of Agriculture, Claresholm, consists of two terms of five months each. The first term begins about the first of November and ends the last of March. Those students successfully passing the examinations at the end of the first year are allowed to enter the second year of the course. At the end of the second year a final examination is given. A diploma is given to those who pass this final examination. In addition to this all of those who, in the opinion of the examining board, are eligible are given entrance standing to the University of Alberta. The course in Agriculture at the University covers three years and if successfully concluded commands the degree of Bachelor of Science of Agriculture. There is a similar arrangement for the Domestic Science students. Those students having a matriculation standing may complete the work at the School of Agriculture in one year.

The course in Agriculture for boys sixteen years and over. List of subjects for First Year Boys.

Field Husbandry	Vegetable Gardening, Floriculture
Animal Husbandry	Elementary Chemistry
Veterinary Science	General Physics
Farm Mechanics	Botany
Farm Dairying	Farm Management
Poultry	English
Horticulture	Mathematics
	Farm Bookkeeping

List of the Subjects for Second Year Boys.

Field Husbandry	Agricultural Physics
Animal Husbandry	Botany & Entomology
Veterinary Science	Farm Bookkeeping
Farm Mechanics	English
Farm Dairying	Mathematics
Poultry	Bacteriology
Horticulture	Farm Management
Small Fruits, Forestry	Rural Economics
Agricultural Chemistry	Civics

The School of Agriculture is excellently equipped, enabling the instructors to teach in a practical way the various phases of each subject. All of the instruction given throughout the course has a direct bearing on the practical side of farming as carried on in Southern Alberta.

DEPARTMENT OF ANIMAL HUSBANDRY, POULTRY, FARM MANAGEMENT AND FARM BOOKKEEPING

In all the animal husbandry work an endeavor is made to emphasize the practical side of the subject and to make it as useful as possible. First year lecture work deals with the practical feeding, care and management of the common classes of livestock. The laboratory periods are devoted to the judging of livestock with a view to fixing in the student's mind the desired type and conformation of animals for market and feeding purposes. With the Second Year the lecture work deals with the classification of the common breeds of farm animals and their characteristics. Lectures are also given dealing with the fundamentals of animal nutrition and breeding. In judging work a study is made of breeding classes and as far as possible some breed characteristics.

In First Year Farm Management and Bookkeeping a study is made of factors contributing to successful farming. The practical work takes up the use of commercial paper and methods of keeping farm books and cost accounts. Second year work continues on from this, taking up factors influencing cost of production, efficiency in farm work. Also a discussion of notes, contracts and other forms including mortgages is given.

In Poultry study the lectures deal with poultry management in regard to housing, feeding, breeding, rearing, and fattening. Practical periods are given in judging, identification, fattening and dressing of poultry. Second year lecture work takes up the classification of poultry and poultry products, poultry nutrition, feeding, common diseases, their prevention and treatment.

DEPARTMENT OF FIELD HUSBANDRY

Instruction:—The aim of this department is to give a comprehensive practical and scientific course in farm crops, cultivation, methods of improvement, fertilizers, seed selection, rotation of crops, judging and grading of grains, with special emphasis on methods and varieties suitable for the Claresholm School territory.

EXPERIMENTAL WORK

Experimental work has been carried on in variety tests, of all farm crops, methods, dates and rates of seeding, rotations and methods of cultivation. The work with sunflowers has been of special interest. Introductions have been made of new varieties from different parts of Canada and the U. S. A. and of Europe, of Sweet Clover, Fall Rye, Durum Wheats, Barley, Oats, Vegetables and Sunflowers, with a view to meeting with the particular needs of the Claresholm School territory. A study of the methods of controlling soil drifting has been made, with the intention of carrying this knowledge to the farmers in the blow area during the ensuing summer.

EXTENSION WORK

Extension work comprises:

1. Seed germination tests for farmers.
2. Correspondence with farmers and others regarding problems in crop production.
3. Outside lectures at Farmers' Institute Meetings.
4. Judging at Agricultural and School Fairs.
5. Personal visits and interviews with farmers regarding their problems at their farms.

AGRICULTURAL ENGINEERING

The Agricultural Engineering course embraces Carpentry (bench work and building construction), Gas Engines, Farm Machinery, Mechanical and Architectural Drawing. The work covered in each course is both technical and practical, placing the students, at the end of the second year course, in a position to do practically all their own engineering work and repairing on the farm.

The first year in carpentering is spent in learning the proper use of all the tools through the construction of useful articles in the shop. The second year covers the practical construction of Farm Buildings both by lectures and the constructing of sections of buildings.

The first year gas engine course covers operations and trouble starting of typical engines, the principles and theory being covered by lectures. The second year course covers the study and operation of tractors, repair work and operation and repair of the different magnetos. Farm machinery is taken in the first year only and includes lectures and practical work on the different machines used on the farm. The mechanical and architectural drawing course is taken during both years. The first year work covers the elementary work and drawing working plans of

shop projects, isometric and perspective views of different objects. The second year covers drawing, tracing and blueprinting of plans of farm buildings. The work in engineering is made as practical as possible. During the spring of 1920 models of the buildings of the School of Agriculture were constructed by the engineering department and formed a part of the Provincial Agricultural Schools' exhibit at the Calgary and Edmonton exhibitions.

Extension work was also carried on among the farmers, the engineer giving valuable advice on different problems such as gas engines and construction of farm buildings. The engineer is always at the service of the farmers of the district and it is hoped that they will take full advantage of the opportunities for advice and help.

DEPARTMENT OF PROVINCIAL BIOLOGIST

Bacteriology:—The course in bacteriology with the second year boys and girls is made to apply as far as possible to Agriculture and Household Science. The study of bacteria in relation to each of the following is taught:—air, water, milk, butter, cheese, soils, preservation of foods, vinegar making and micro-organism in bread making.

Culture Work:—During April, May and June cultures for the inoculation of legume seed were grown at the School of Agriculture, Clareholm, and supplied to the farmers of Alberta and British Columbia and Saskatchewan. The following is a statement of those sent out during the year 1920.

Alfalfa	704
Sweet Clover	270
Field Peas	209
Alsike	17
Red Clover	15
White Dutch Clover	5
Beans	2

1,222

Entomology:—This subject is taught to the boys of the first and second year. The first year boys study elementary entomology, dealing with the place that insects occupy in the animal kingdom, their near relations, parts of the body, circulatory, respiratory and digestive systems and economic orders. The second year boys study the life history of the most important economic forms such as: grasshoppers, cutworms, sugarbeet webworms, beetles, flies, moths, etc. The various methods of control and insecticides are fully discussed.

Extension Work:—Last summer considerable time was spent fighting the outbreaks of grasshoppers, cutworms, wireworms and sugar-beet webworms. Meetings were held throughout the district organizing the work of destroying grasshoppers. Community action was encouraged and poison bait mixing stations were started in various districts. The work gave very satisfactory results.

Botany:—This subject is taught to first and second year boys. The more elementary phases are taught to the first year boys including seed germination and controlling influences, vegetative parts of a plant, parts of a flower and uses of each, weeds and weed-seeds and important economic orders of plants.

The second year boys are taught the morphology of the various tissues, necessary elements, plant breeding, rusts, smuts, blights and the various fungicides.

EXPERIMENTAL WORK

During the summer of 1920 plot work and experiments were carried on with various strengths of formalin for the prevention of stinking or bunt smut of wheat, covered smut of barley, naked smut of oats and covered smut of oats. In all cases the immersion method was used. During the summer of 1921 the sprinkling method, using various strengths of formalin, will be experimented with. Plot experiments were conducted in connection with various fungicides for the prevention of scab on potatoes. The bichloride of mercury gave best results but was not entirely satisfactory. A large number of plants and weeds were sent by farmers and teachers to the School of Agriculture, Claresholm, for identification. With regard to school fair work each school was given the full directions for carrying on the alum-bath method of preserving the natural colors of plants.

HORTICULTURE

This subject is taught to the boys and girls and is made to apply as far as possible to the farm home. The hardy trees and shrubs for wind breaks are recommended. Instructions in the raising of hardy trees from seed and cuttings are given. The beautifying of the farm home by the planting of wind breaks, ornamental trees and shrubs, making of a lawn and the planting of annual and perennial flowers is fully discussed. Experimental plot work was carried on in the raising of hardy trees and shrubs from seed and from cuttings, and the raising of perennial flowers from seed.

VETERINARY SCIENCE

In the course of lectures in veterinary science it is the aim of the instructor to help the students to grasp a broader and more accurate idea of the anatomical structure of the animal body, and the normal physiological functions of the various organs, the proper care, and the application of such simple remedies as are beneficial to help maintain the animal body in the normal healthy condition, thus preventing the developing of serious complaints, and their even more serious complications.

Lectures on contagious diseases are also given periodically by Dr. P. R. Talbot, the Provincial Veterinarian.

ENGLISH LITERATURE

In English composition stress has not only been laid upon the principles of rhetoric and the course as outlined in the calendar, but also considerable attention has been given to newspaper and magazine reading, with the idea of broadening the students' outlook, increasing their vocabulary, and familiarizing them with current events. Every encouragement has been given the students to take part in debates and public speeches, not only in class periods, but also at literary functions. Inter-divisional and inter-year debates help to maintain a good class spirit.

With regard to English literature less attention has been paid to the dissection of the various works than to the study of the various characters and the treatment of the author's personal qualities, style, and relation to the times in which he lived. The consideration of the whole rather than the part work to this end. The local theatre has co-operated in this subject by showing films of *Treasure Island* and *Evangeline*, while a lantern lecture was given at the school dealing with Charles Dickens' life and *The Tale of Two Cities*. The ultimate aim has been to instil the students with an appreciation of, and the desire for, the best of English literature.

FARM MATHEMATICS

The course in Mathematics reviews the simple process of Arithmetic and deals with mensuration and commercial arithmetic. Special attention is given to the practical problems of the farm and home which arise in farm and household experience. Every opportunity to convert each stage of the work into one of practical value has been acted upon.

PHYSICAL SCIENCE

This subject has of necessity been treated in a rather elementary manner, the time being devoted largely to the principles underlying this broad subject. In the laboratory periods experiments were arranged with the object not only of helping the student to become acquainted with the practical side of the course but also of imbibing him with the need for accuracy and attention to minutest details in this branch of science.

GIRLS

Course in Household Science for girls sixteen years and over consists of two terms of five months each.

LIST OF FIRST YEAR SUBJECTS

Cooking	Sanitation
Foods	English
Physiology and Anatomy	Mathematics
Home Nursing	Horticulture
Sewing	Home Dairying
Textiles	Poultry
Embroidery	Elementary Chemistry
Laundry	Civics
Household Administration	Physical Culture

LIST OF SECOND YEAR SUBJECTS

Cooking	English
Dietetics	Mathematics
Hygiene	Horticulture
Home Nursing	Home Dairying
Sewing	Poultry
Textiles	Bacteriology
Household Administration	Household Chemistry
Home Bookkeeping	Physical Culture

HOUSEHOLD SCIENCE

Instruction:—The aim of this course is to give the young women an efficient training in practical home-making. Not only is the practical side developed, but sufficient theory is given to lend interest and meaning to the work.

COOKING

The work in cooking consists of actual practice-work rendered intelligible by lectures concerning the theory of the subject. It comprises the planning, preparation of meals and serving of meals, the marketing and storage of foods and the detailed study of food values both in health and disease.

HOUSEHOLD ADMINISTRATION

Closely related to this is the study of Household Administration, which covers subjects of vital importance to the homemaker; such as cleaning processes, house sanitation, home bookkeeping, as well as general ideas on house planning and decoration. Here, too, the students gain knowledge by the most impressive methods, that of carrying out the operation under discussion. During the summer months instructions were given at some of the school fair centres, regarding the cooking and sewing exhibits for the school fairs.

SEWING

Instruction:—A very practical course in sewing is given, including the use of the simple commercial patterns. In the first year students make a complete set of under garments, one plain blouse, one plain dress. In the second year students make one tailored shirtwaist, one tailored skirt, made-over garments, graduation dress and infant layette. The students provide all materials and retain finished articles. They also select styles and materials, thus developing their ability to choose suitable and useful articles. Instruction is also given in all common stitch forms, making of seams, hems, sewing on buttons and hooks and eyes, making button holes, methods of putting on lace, frills and edgings, plackets and darning and patching and use of machine attachments.

EMBROIDERY

All the common embroidery stitches are taught and two finished pieces of embroidery are required. The characteristics, tests, uses and adulterations of all the fabrics: silk, wool, cotton, linen and points on selection and use of each are taught. Samples are shown and good and poor qualities of each considered.

Laundry:—This follows work on textiles, giving practical laundering of all the fabrics in the most satisfactory way, removing of stains, methods of dry cleaning, soap making, pressing and cleaning suits, small family wash and equipping the home laundry.

During the summer months instructions were given at some of the school fair centres regarding the sewing and cooking exhibits for the school fairs.

Anatomy and Physiology:—These two important subjects are discussed in lectures and illustrated by life-size anatomical charts. The systems of the human body and the organs comprising each are dealt with from the point of view of position, function and hygiene. These subjects are closely correlated with and make clear many points under discussion in Foods, Dietetics and theoretical cooking.

Personal Hygiene:—The aim of this subject is to set forth plainly the best means of developing and maintaining physical vigor. The initial lectures are devoted to a concise discussion of the anatomy and physiology of the parts under consideration, upon which is based the subjoined advice.

Home Nursing:—This work, taught by lectures and demonstrations, enables the students to gain knowledge of this important study and to give them simple instruction in practical ways to assist the doctor in all kinds of illness in the home when a trained nurse is not available. The demonstrations consist of: Bedmaking and changing linen in all cases; preparation of fracture bed; taking of temperature, pulse and respiration; method of making and applying poultices, fomentations etc.; bandaging, including the use of the roller and triangle bandages, slings, etc.; practical treatment of common emergencies.

Lectures over the following: Preparation of sick room; care of patient, bathing and sponging, administration of cold and hot packs, giving of medicines; charting; theory of treating emergencies, obstetrical nursing and care of the infant; infectious and contagious diseases and disinfection.

SCHOOL FAIR WORK

The school fair work was re-organized with the view of serving a much larger territory than in previous years and five new centres were organized at strategic points throughout the territory of the new schools at Raymond and Gleichen with the object of introducing school fair work in this new territory and results were extremely satisfactory. The School of Agriculture supplied the seeds, instructional circulars, mounting materials for plants and insect collections, entry tags, prize tags and a grant to the extent of twenty-five dollars for live stock prizes. All the central executives were visited several times and the majority of the schools were visited and given a lecture intended to help and to stimulate interest in the work. Judges were furnished by the district. This work began April first and the last fair was held on October the ninth.

Fifteen fairs were held, approximately three thousand children competing. The exhibitions of garden products, grains, live stock, cooking, canning, sewing, arts and manual arts, penmanship, map drawing, plant, weed and insect collections, were good in most cases, and the live interest created in the community at large was amply evidenced by the large attendance of children and their parents at the fairs. Mr. O. McConkey had charge of the school fair work and devoted his whole time to this work during the spring and summer.

SCHOOL FAIRS

<i>School Fair</i>	<i>Secretary</i>	<i>Girls</i>	<i>Boys</i>	<i>Total</i>
Cardston	J. W. Low ..	244	298	542
Cowley	Nellie McWilliam ..	59	67	126
Macleod	R. J. E. Gardiner ..	126	122	248
Clareholm	R. S. Law ..	141	201	342
Nanton	G. A. Bishop of Parkland ..	134	140	274
High River	W. D. Elliott ..	144	144	288
Queenstown held at Arrowwood consolidated ..	H. Spankie ..	99	119	218
Vulean	Rev. Hayes ..	101	124	225
Barons	L. E. Grace ..	65	82	147
Coaldale	M. J. Low ..	66	62	128
Brooks	Don. H. Bark ..	44	45	98
Suffield	L. O. Burger ..	87	107	194
Taber	R. J. Gould ..	51	31	82
Raymond	Eric Tucker ..	160	160	320
Gleichen	P. K. Gentleman ..	104	109	213
		1,625	1,811	2,438

The following is a tabulation showing the points at which school fairs were held and the date:

Taber	Sept. 3
Raymond	Sept. 7
Cardston	Sept. 8
Cowley	Sept. 10
Clareholm	Sept. 14
Coaldale	Sept. 15
Nanton	Sept. 16
High River	Sept. 18
Macleod	Sept. 18
Vulean	Sept. 22
Queenstown held at Arrowwood consolidated ..	Sept. 24
Brooks	Sept. 24
Barons	Sept. 30
Suffield	Oct. 5
Gleichen	Oct. 9

The Objects of School Fairs Are:—

1. To stimulate in the children an interest in the activities of the farm and home.
2. To increase their knowledge of the principles and practices of farming and homemaking.
3. To encourage the teachers of agriculture and home economics in the rural schools.
4. To increase the interest of parents in the work of the schools.
5. To raise the standard of work done by the pupils in all departments.

The objects were accomplished to a very great extent throughout the entire district, and the results in every way were extremely satisfactory.

STUDENT ORGANIZATIONS

Students' Council: The duty of this council is to co-operate with the staff in maintaining discipline among the members of the student body.

Athletic Society:—This is a very energetic society whose duty it is to provide healthful sports for the students. Football, basketball and hockey are played by almost all the boys, while basketball and hockey are enjoyed by the girls. There is a good open air rink on the school grounds.

Literary Society:—The duty of this society is to provide entertainment for the students at the weekly literary meetings held each Saturday night. This entertainment takes the form of debates, public speeches, musical selections and dancing. Addresses and illustrated lectures are given by members of the staff and prominent speakers of Claresholm.

Y. M. C. A.:—This society is a joint society of the Y. M. C. A. and the Y. W. C. A. Public meetings are held in the Auditorium of the School of Agriculture each Sunday afternoon. Addresses are given by clergymen, Y. M. C. A. officials and others. After the address the students break off into Bible study discussion groups. This society performs a vital service in the lives of the students.

Respectfully submitted,

J. C. HOOPER,

Principal.

REPORT OF GLEICHEN SCHOOL OF AGRICULTURE

With the decision to establish three additional Schools of Agriculture in the province of Alberta came an arbitrary re-division of the province into six school areas, whereas before three large areas were tributary to the three original Schools at Claresholm, Olds and Vermilion. The new School of Agriculture at Gleichen is intended to serve the territory bounded roughly as follows: on the northwest by the C. N. R. Calgary to Wayne; on the north by the Red Deer River from Rosedale to the Saskatchewan boundary; on the east by the Saskatchewan boundary; on the south by the C. P. R. between Walsh and Suffield, and Suffield and Lomond; and on the southwest by a line drawn from Lomond to Carseland.

The south side of the farm on which the school is situated adjoins the Gleichen Agricultural Grounds, while the school itself has a splendid site facing west, at the top of a gentle rise where it may be seen from the railway as one approaches Gleichen from either direction. The work of constructing the school buildings was commenced in the fall of 1919, and completed the following year in sufficient time for the school term which began on November 1st.

OPENING

The official opening of the new school took place on the ninth of November by the Minister of Agriculture, at the same time as the unveiling of the town War Memorial. The Superintendent of Schools, members of the Government, and Agricultural Department, and several

military officials were also present. The different addresses presented in the Assembly Hall of the school and later in the evening at the banquet arranged by a citizens' committee in the town, enables those residents of this new Agricultural School district present to understand the purposes of the Alberta Schools of Agriculture. The school and farm were thrown open to the visitors, and members of the staff conducted these over each department of the school.

STAFF

The names of the members of the school staff and their respective departments are given below:

G. B. Bodman, B. S. A., Principal and Instructor in Science.
 M. L. Freng, Farm Manager and Instructor in Animal Husbandry.
 W. Scouten, B. S. A., Instructor in Field Husbandry.
 W. J. Hoover, Instructor in Mechanics.
 P. A. McDougall, B. A., Instructor in English and Mathematics.
 Miss G. Robertson, Instructor in Home Economics.
 Miss F. M. Morton, Instructor in Home Economics.

The work in Veterinary Science, Dairying and Home Nursing is presented by the following instructors who are not permanently located at the Gleichen School.

Dr. P. R. Talbot, V. S., Provincial Veterinarian.
 Dr. Colin MacPherson, V. S., Veterinary Science.
 W. J. Beckett, Dairying.
 Miss H. B. Acton, R. N., Home Nursing.

ENROLMENT

The enrolment at the Gleichen School of Agriculture was hardly as great as was anticipated earlier in the year, but this is thought to be explainable by the disappointment experienced by many farmers in the actual grain yield, as against the expected yield. The drop in wheat prices, causing the 1920 crop to be one of the most expensive the western grain grower has ever produced, made this still further felt.

Due to the fact that the area served by the Gleichen School of Agriculture overlapped into that originally tributary to the Olds and Claresholm Schools some second year students entered the school at Gleichen.

The names of the students who registered at the Gleichen School in the course of agriculture appear below:

And, Milton F.	Gleichen
And, W. C.	Gleichen
Clarke, Henry J.	Rosebud
Corbiell, Harry	Cluny
Corbath, Herman	Cluny
Crao, Willis E.	Gleichen
Garriott, Clarence	Strathmore
Garrison, Harold	Jenner
Gebhardt, P.	Hilda
Gehrke, Leonard	Blackie
Gray, Donald E.	Langdon
Green, Roy C.	Standard
Hall, Wilbur	Milo
Hunter, Joseph	Cantuar, Sask.

Keer, C. W.	Cheadle
Kennedy, J. G.	Carseland
Lacerte, J.	Grand Mere, Que.
Lawrie, S. W.	Namaka
Leabey, Alfred ..	Queenstown
McBean, G. A.	Namaka
Mitchell, C. A.	Calgary
Nelson, Nels	Queenstown
Phillips, E. W.	Carseland
Rasmussen, C. C.	Standard
Thorne, S.	Langdon
Wheeler, Loy	Strathmore
West, Morris	Namaka
Wilson, Roy C.	Innisfail
Winters, George	Langdon

Students registered in the Home Economics Course at Gleichen are as follows:

Atkins, Mae ..	Calgary
Breton, Alice ..	Gleichen
Brown, Marcia	Namaka
Corbitt, Adelaide ..	Cluny
Crapo, Thelma ..	Gleichen
Giguere, Rose ..	Cluny
Green, Edith ..	Standard
Hansen, Helen E. ..	Standard
House, Emily ..	Arrowwood
Kirstein, Alice	Cluny
Lawrie, Isobel ..	Namaka
Nelson, G. A.	Queenstown
Peterson, Edna	Milo
Sim, Margaret	Namaka
Vliet, June	Gem
Watson, Margaret	Namaka
Will, Annie ..	Rose Glen
Will, Lizzie	Rose Glen
Wilson, Isabella	Gleichen
Woods, Thelma	Gleichen

Registration shows that of the total, 59% are young men taking the course in Agriculture, while 41% are young women registered in the Home Economics course. A large proportion of these are American born.

SCHOOL INSTRUCTION

The Schools of Agriculture calendar gives a very comprehensive outline of the work undertaken by the students in both courses at the School. This is of a very diversified nature, and provides a full time table for the whole five months of instruction. In a general sense the work may be divided into that carried out, on the one hand in the class rooms, and on the other in the laboratory. The former, with little exception, is given entirely during the morning periods, while the latter occupies the student's afternoons. While it is borne in mind that the main function of the School is to enable those in attendance to acquire better technique in the operation of farm and home, the object of the course is to turn out a broad-minded citizen also—for this reason considerable stress is laid on academic subjects as well as the practical.

STUDENT LIFE

The value of developing student leadership, executive ability and interest in social and literary organization is well recognized. Accordingly, as soon as the students have become familiar with one another and their new surroundings, they are encouraged to form literary, social and athletic societies, electing their own officers and executive committees. Three evenings a month, and part of one afternoon, are devoted to some student programme. The literary society pays especial attention to public speaking, debates, and similar work. Lantern lectures are given, for which thanks are due to the Extension Department of the University for contributing slides. The students also avail themselves of the debating literature provided by that department, but at the same time are encouraged to develop their own line of argument and reasoning.

In the interest of hockey the Athletic Society has shown itself very enthusiastic in making a rink. Owing to the open fall and continual return of warm weather very little skating was done before the Christmas holidays, it being hard to maintain a good sheet of ice. Early in January, however, this was established and all showed themselves enthusiastic in developing a good hockey team.

SCHOOL FAIRS

School Fair work will be conducted by the Gleichen School of Agriculture. In 1920 only one new school fair was organized in this area by the new school working with the Claresholm school. This was in the town of Gleichen itself. Taking part in the fair were nine school districts and the Old Sun and Crowfoot schools on the Blackfoot Indian Reserve. The fair was held in the Agricultural Hall on October 9th, and proved very successful both in number and quality of exhibits. Owing to the great distance away from the school fair centre of some of the schools participating it is probable that some of these schools will form a centre of their own in 1921. This will make smaller but more localized fairs. Other school fairs held in our territory were those in Strathmore (by the Olds School of Agriculture) and Queens-town, Brooks and Suffield (by the Claresholm School of Agriculture).

GRASSHOPPER OUTBREAK

The first report of any outbreak of grasshoppers came from points about fifteen miles south-west of Gleichen. These were visited and the farmers concerned given directions for preparing and scattering poisoned bait for the young hoppers. Further reports of destruction by these pests came from different parts of the district about one month later, and preparations were made immediately for securing poisoning materials. Since the town of Gleichen and the surrounding country had no municipal organization, appeal was made to the Municipality of Marquis for assistance since many of the affected farmers lived in that municipality, and poison materials were obtained through the School of Agriculture from the government agent in Calgary. A mixing centre was established at the school, a responsible man was engaged to do the

mixing under careful supervision, and altogether 14,000 lbs. of bran were poisoned, some eighty farmers purchasing the poisoned mixture. With very slight exception satisfactory reports came in with regard to the effectiveness of the poison, whatever dissatisfaction was voiced being traceable to either faulty application or the fact that the man's neighbors were not poisoning. The poison bran mash was sold at the rate of \$6.50 per 100 lbs. of dry bran, and scattered at the rate of fifteen to twenty-five pounds per acre.

The hoppers were in every case found to be much worse in stubbled-in crops; and where no co-operation in poisoning took place they made serious inroads into the crop. In such fields difficulty was experienced in stating how much damage had been done by hoppers, and how much by poor cultivation. The average damage was estimated to be not over one per cent.

EXPERIMENTAL PLOTS

Experimental plots were not established in 1920, but will be begun in 1921. These will include variety tests of grains, forage crops, roots and potatoes; rates and dates of seeding; cultural methods, and fertility tests. As information of value is accumulated it will be incorporated with instruction given in the school.

G. B. BODMAN,

Principal.

REPORT OF OLDS SCHOOL OF AGRICULTURE

The following are the present instructors in the Olds School of Agriculture.

- F. S. Grisdale, B. S. A., Principal and Instructor in Agronomy and Horticulture.
- C. A. Weir, B. S. A., Farm Manager and Instructor in Animal Husbandry and Farm Management.
- G. R. Holeton, B. Sc., Mechanics.
- H. M. Campbell, B. S. A., Science.
- M. W. Maylon, B. S. A., English and Mathematics.
- W. G. Moore, V. S., Veterinary Science.
- Anne MacDonald, S. D. A., N. D. D., Poultry and Dairying.
- J. N. Martin, B. S. A., Biology.
- C. McIntyre, Cooking.
- E. J. Fee, B. S. H. Ec., Sewing.

The following special lecturers gave instruction at the school during the term:

- Wm. Grant, Blacksmithing.
- Dr. Talbot, Veterinary Science.
- Anna Fennell, Home Nursing.

ENROLMENT

Each year's attendance at the Olds School of Agriculture since 1913-14 is as follows:

Year	First Year		Second Year		Total
	Men	Women	Men	Women	
1913-14	65	39	..	..	104
1914-15	69	19	23	8	119
1915-16	83	50	21	7	161
1916-17	56	53	19	7	135
1917-18	81	29	18	17	145
1918-19			Influenza		
1919-20	85	38	28	8	159
1920-21	69	35	42	17	163
	771		215		986

The total number of students enrolled in the first and second years since 1913	986
The total number of students who have entered the first years since 1913	771
The total number of students who have entered the first years in Agriculture since 1913	508
The total number of students who have entered the first years in Domestic Science since 1913	263
The total number of students who have taken the second year's work in Agriculture	151
The total number of students who have taken the second year's work in Domestic Science	64
The average annual attendance in the first year Agriculture for seven years	72.57
The average attendance in the first year Domestic Science for seven years	37.57
The average attendance in the second year Agriculture for six years..	25.16
The average attendance in the second year Domestic Science for six years	10.66
The average per cent. of agricultural students who have returned each year during the past six years to take the second year's work ...	34.4%
The average per cent. of Domestic Science students who have returned each year during the past six years to take the second year's work	28.00%
The percent. returned this year from 1919-20, first year in Agriculture	41.11%
The percent. returned this year from 1919-20 first year in Domestic Science	40.00%
The number of graduates in Agriculture who have entered Varsity	40
The number of graduates in Domestic Science who have entered Varsity	4
Average age first year women	18.97 years
Average age first year men	19.18 "
Average age second year women	20 "
Average age second year men	20.51 "

The following is a list of the names and addresses of men registered at the Olds School of Agriculture in the Agricultural Branch this year.

FIRST YEAR

Cochrane, Maynard	Olds
Crawford, Arthur	Cochrane
Cameron, Duga	Hughenden
Coulson, Robert	Craigmyle
Cunningham, Dean	Ohaton
Carter, Orvil	Coronation
Clifton, Andrew	Delburne
Corsiatto, John	Bowden
Dahn, Hubert	Hughenden
Deylin, T. P.	Ohaton
Davidson, Arthur	Three Hills
Davidson, Roy	Three Hills
Estes, Leonard	Carstairs
English, Robert	Fleet

Fleming, E. G.	Ohaton
Freddell, Walter	Carstairs
Field, Grant	Bowden
Gibson, Andrew	Lacombe
Graff, Wm.	Swatwell
Gustus, Wm.	812 18th Ave. W., Calgary
Graham, Fred	Olds
Gilbertson, Lorne	Talbot
Harvey, James	Olds
Heritage, Foster	Olds
Hutchinson, Alex	Duhamel
Hay, J.	Elnora
Howes, R. W.	Millet
Hosegood, Harvey	Didsbury
Harrington, James	730 5 ¹ / ₂ St. N. W., Calgary
Hamilton, Ross	2239 14th St. W., Calgary
Jamieson, Wm.	Delburne
Johnston, S. C.	Carbon
Kimmel, R. D.	Carstairs
Kauffman, Wm.	Donalda
Kluck, Aloysius	Macklin, Sask.
Lundgren, Oscar	Kevisville
Lee, Daniel	Hanceville, B. C.
Lewis, Norman	7858 79th Ave., Edmonton
Lindemood, Harry	Clive
Manning, Erol	Amisk
Muir, Robert	Delburne
Malaher, Wilfred	Clive
Moritz, Earl	Olds
Michiner, Waldo	Olds
McQuarrie, James	Stettler
McNamara, Albert	Millet
McNamara, Charles	Millet
McKee, Paul	Benalta
McIntyre, John	Langdon
New, Jack	Strathcona
Price, Lloyd	420 14th Ave. E., Calgary
Paverly, Fred	Shepard
Reece, Bert	Water Glen
Robinson, Frank	Ghost Pine Creek
Robinson, Hugh	Ghost Pine Creek
Recknagle, Roland	Wetaskiwin
Spieght, Leonard	England
Stephenson, Arthur	Elnora
Sharpe, Hobert	Bashaw
Sawers, Leonard	Camrose
Suggett, C. A.	Bentley
Thomson, Carl	Innisfail
Timpleton, John	206 Searbor Ave. W., Calgary
Taylor, Geo. E.	Big Valley
Thomson, W. J.	Shaunavon, Sask.
Turner, Geo.	Clairmont
Wilson, L. A.	Carstairs
Welty, Allen B.	Eagle Hill
Wilkinson, Morley	Clover Bar

SECOND YEAR

Bard, Harry	10344 84th Ave., Edmonton
Bowers, Gordon	Airdrie
Banks, Blight	Coronation
Berry, G. H.	Olds
Clutton, Charles	Delburne
Davies, Geo.	10606 84th Ave., Edmonton
Davignon, C. E.	Knowlton, Que.
Edgar, James	37 Scott Blk., Edmonton

Foster, L. H. H.	10029 93rd St., Edmonton
Fetherstonhaugh, Earl	Fort Saskatchewan
Ficht, Jos.	209 4th Ave. N. E., Calgary
Graff, George	Swalwell
Howe, Jack	12222 Jasper Ave., Edmonton
James, Reesor	Carstairs
Lund, Daniel	Dowling Lake
Lowe, Arthur	Amisk
Mossman, Frank	Hughenden
Mossman, C. C.	Hughenden
Morris, Fraser	Lacombe
Mann, Mark	Alix
Moss, Albert	Olds
Martin, W. M.	10365 93rd St., Edmonton
Malloch, Gordon	Stony Plain
Murdoch, Royal	Morningside
Murdoch, Charles	Morningside
McCalla, Fred	Bremner
McIlvride, Robert	Rowley
McCannel, D. A.	208 Crescent Rd., Calgary
McLean, E. G.	10454 84th Ave., Edmonton
Nelson, Nels	Peace River
Parker, Raymond	Brant
Peddieord, E.	Hughenden
Quantz, Percy	Penhold
Richards, Evan	Red Deer
Ruark, Archie	Ensign
Rozmahel, Frank	Viking
Richardson, Ben	Killam
Switzer, R. P.	Lacombe
Sheppard, Sydney	Strathcona
Stannard, Roy	Strathcona
Ward, Harris	Stettler
Wilson, D. A.	Killam

The following is a list of the names and addresses of the young women registered at the Olds School of Agriculture in the Household Science Branch.

FIRST YEAR

Anderson, Alma	Gwynne
Anderson, Selma	Gwynne
Anderson, Christine	Red Deer
Baugh, Alice	Clive
Bly, Ellen	Killam
Cook, Elizabeth	Halkirk
Campbell, Lilly	Olds
Clutton, Rose	Delburne
Dufva, Selma	Water Glen
Dufva, Ellen	Water Glen
Davidson, Elizabeth	Delburne
Duff, Stella	Olds
Edgar, Bertha	Innisfail
English, Mona	Fleet
Farnalls, Dorothy	Halkirk
Hays, Alice	Blairmore
Hays, Louise	Blairmore
Kinzer, Clare	Killam
Kinzer, Margaret	Killam
Koehler, Marian	Clive
Liddell, Elizabeth	Loughheed
Maxson, Ronnie	Markerville
McLean, Marguerite	Millet
McLean, Ruby	Millet

Redig, Jessie	Lacombe
Shields, Jennie	Penhold
Slifka, Julia	Botha
Shields, Gladys	Penhold
Sherrer, Alice	Lacombe
Strachan, Julia	Huxley
Thompson, Leona	Olds
Tremmel, Dorothy	Botha
Webster, Eveline	Didbury
Westman, Anna	Brightview
Zurfluh, Elfriede	Botha

SECOND YEAR

Clutton, Rowena	Delburne
Harding, Elsie	Olds
Harding, Dorothy	Olds
Hall, Mrs. A. W.	Youngstown
Kershaw, Marie	Didbury
Lohner, Celia	Daysland
Lohner, Laura	Daysland
McKenzie, Annie	Hilldown
Nelson, Esther	Markerville
Pokotillo, Genevieve	Olds
Ray, Mollie	Westcott
Riley, Ada	Olds
Stephenson, Rosa	Markerville
Seyer, Gertrude	Botha
Stratton, Minnie	Donalda
Stevenette, Ada	Innisfail
Tait, Isabel	Leo

TWO YEARS' INSTRUCTION

The course in the School of Agriculture consists of two terms of five months each. The first term begins the first of November and ends the last of March. Those students who are successful in passing the examinations at the end of the first year are allowed to enter the second year's courses. At the end of the second year a final examination is given. A diploma is granted to those who pass this final examination. In addition to this all those who in the opinion of the examining board are eligible are given entrance standing to the University of Alberta. The course in agriculture at the University covers three years and if successfully concluded commands the degree of Bachelor of Science in Agriculture. There is a similar arrangement for the Domestic Science students.

COURSES IN AGRICULTURE

The instruction in the Olds School of Agriculture is made to bear on the practical side of farming. The School has an excellent equipment in all departments. It is a matter of considerable satisfaction to the instructors in the various departments to realize that each year the courses in the school are becoming more valuable to the students; more valuable because the experience of the work in previous years is used in working out course of study for the year in question. The useful material is retained and the less valuable parts are discarded to give place to material which is considered to be more serviceable. The course of study is as follows:

Soils and soil cultivation, judging, feeding and care of livestock, the identification and eradication of weeds, judging and grading seed grain, selection of seed grain, rotation of crops, veterinary science, carpentry, blacksmithing, farm machinery, cement work, gasoline engines, road building, growth of small trees, vegetables, trees and shrubs, killing, cutting up and curing meats, farm management and elementary courses in mathematics, bookkeeping, chemistry, physics, English, public speaking, and poultry. In dairying, instruction is given in cheese-making, milk production, milk testing, buttermaking, care of the separator, etc.

DOMESTIC SCIENCE COURSE

The home-makers' course is primarily one of a very practical nature. It is intended to make the girls who take it efficient home-makers. It includes enough theory to make the practical side truly valuable. In this course sewing, cooking, home nursing, laundering, household administration, physiology, hygiene, sanitation, foods, household bookkeeping, dairying, poultry, horticulture, physical culture and courses in elementary English, mathematics, chemistry, and physics are taught.

STUDENT ORGANIZATIONS

In addition to the purely academic work the students have various organizations for promoting the lighter side of the college life.

The literary society which holds weekly meetings, is given over to a programme of debates or some other kind of entertainment. Open debates are held once a month, and it is gratifying to note the benefit derived by most of the students from these meetings, especially in the matter of being able to express themselves properly to an audience.

The athletic association is active and has arranged for various kinds of exercise and amusement. There is a good open air rink at the school and there is skating and hockey games almost every day of the week.

The social committee has done valuable service in providing for three social evenings each month. These social evenings take the form of dancing, games, stunts, musical numbers, and the reading of the O. S. A. Chinook.

VACCINE

Since issuing the 1919 report the school has sold 1,070 doses of germ-free blackleg vaccine. This vaccine sells at fifteen cents per dose.

ALUMNI

The fifth reunion of the O. S. A. Alumni Association was held on Jan. 3rd, 1921. The attendance was very good and practically every class was represented. At the afternoon meeting it was decided to publish a monthly "news letter" to keep the students more closely in touch with the school and its work. A banquet and dance followed the meeting.

MAGAZINE

The Olds School of Agriculture is publishing a magazine again this year. For a few years the three Schools of Agriculture combined in publishing what was known as the "A. S. A." (Alberta Schools of Agriculture) Magazine. This arrangement made a large publication and gave a great deal of additional work to the school management at the point where the editing and printing was done. Accordingly, with the idea of having a small magazine it was decided to publish the "O. S. A." (Olds School of Agriculture) Magazine. With this arrangement it is planned to omit all advertising space, to keep the size under fifty pages and to reduce to a minimum all the work pertaining to its publication. This is the second year the O. S. A. magazine has been published.

CORRESPONDENCE

June 21st, 1913, to June 30th, 1914	3793
June 30th, 1914, to June 30th, 1915	2649
June 30th, 1915, to June 30th, 1916	2221
June 30th, 1916, to June 30th, 1917	5955
June 30th, 1917, to June 30th, 1918	2688
June 30th, 1918, to June 30th, 1919	1924
June 30th, 1919, to Jan. 31st, 1920	1317
Jan. 31st, 1920, to Jan. 31st, 1921	2459
Average per year	2680 8

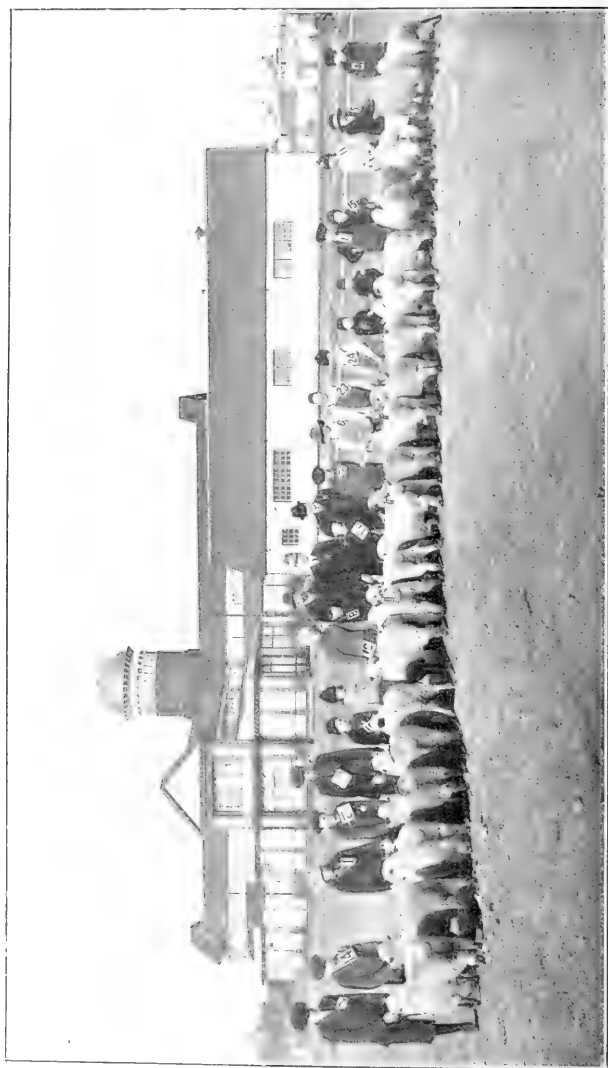
EXTENSION WORK

The work of the staff connected with the Olds School of Agriculture is, broadly speaking, divided into two parts, that of instructing during the five winter months, and extension work, with the students and farmers during the remaining part of the year. This extension work embraces many phases of agriculture. The Animal Husbandry Instructor is available to farmers for consultation on live stock problems. The Mechanics Instructor gives valuable advice and information on building plans, engines, blacksmithing and carpentry. The Science Instructor is used by the public in various ways. For instance, he is ready to assist them in soil and crop problems. The Agronomist conducts considerable extension work with the farmers and students in the district which is served by the school. He co-operates with them in testing out varieties of grains, grasses, clovers and cultural methods of one kind or another. Judges are supplied to a large number of fairs, institute meetings are addressed, good farming competitions judged, and grain crops inspected for the Canadian Seed Growers' Association. The School Fair and Pig Club work now takes all of one man's time.

SCHOOL FAIRS

The School Fair work for 1920 was conducted under the same plan as was followed in the previous year and was under the direct control of Mr. G. R. Holton.

Any community within the territory of this school wishing to establish a fair centre were asked to form a local committee to look after the details as follows:—



BOYS AND GIRLS' LAMB COMPETITION AT CALGARY FAIR

1. Select from eight to twenty-five schools to take part in the work.
2. Receive seeds and deliver same to the schools.
3. Raise money to finance prize list (other than that provided by the Department of Agriculture).
4. Make all local arrangements for the fair.

The School of Agriculture supplied the seeds, instructional circulars, mounting material for plant and insect collections, entry tags, prize lists, prize tags, and a grant to the extent of \$25.00 for live stock prizes. A representative of the school went out to help in organizing and supervising on request, judges for the fairs were furnished by the school. The co-operation of the school inspector was secured at practically every centre. The work was begun April 1st and the last fair was held on October 2nd.

The following classes of exhibits were shown: Garden products, grains, live stock, cooking, canning, sewing, art and manual arts, penmanship, map drawing, and plant, weed and insect collection. The exhibits in all these classes were in most cases good and showed that a live interest had been taken in the work.

The boys received potato seed and the girls flower seeds, and each pupil was given the following kinds of garden seeds: Carrots, beets, parsnips, peas, mangles and turnips.

At most of the centres the Canadian Bankers' Association through a local bank gave special prizes for beef calves and pigs.

This year the government grant was withheld in all cases, where the school fair was held jointly with the Agricultural Fair. This was on account of the fact that the popular attractions at the average Agricultural Fair detracted the attention of the pupils, from their own work, and also the lack of sufficient space to show the exhibits of both fairs. The only joint fair held this year was that at Milnerton. This fair being a straight Agricultural Fair did not have the detracting influence mentioned.

The new schools at Youngstown and Gleichen which have now taken over some of the territory formerly served by the Olds school were not fully organized last spring, so that the Olds School continued the School Fair work in the entire territory. Principal R. M. Scott of the Youngstown School took charge of the judging at points within the territory of his school.

The following is a tabulation showing points at which fairs were held, together with data regarding each.

Fair Centre	Date of Fair	No. of Schools Entering	No. of Pupils Receiving Seeds	Estimated No. of Pupils Exhibiting	Estimated No. of Exhibits
Strathmore	Sept. 8	15	257	200	425
*Acadia Valley	Sept. 10	8	114	...	...
Olds	Sept. 11	19	331	230	475
Castor	Sept. 13	28	367	350	585
*Donalda	Sept. 14	11	190	150	350
*Coronation	Sept. 15	11	145	...	...
Stettler	Sept. 16	9	112	100	250
Consort	Sept. 16	12	206	...	...
*Delburne	Sept. 17	9	218	150	350
*Monitor	Sept. 17	10	77	...	...
*Elnora	Sept. 18	8	51	100	300
Sundre	Sept. 21	8	71	35	125
*Fair Acres	Sept. 21	9	144	...	...
*Oyen	Sept. 22	11	127	...	...
Chinook	Sept. 23	14	219	...	...
Bowden	Sept. 23	7	102	50	125
Clive	Sept. 24	10	177	160	350
Youngstown	Sept. 25	13	234	...	...
*Innisfail	Sept. 25	13	174	125	275
Three Hills	Sept. 28	13	223	185	500
Milnerton	Sept. 29	7	92	85	300
*Red Deer	Oct. 1	15	232	200	600
Trochu	Oct. 2	11	211	35	125
Leo (cancelled) ....	.....	11	119	...	...
		271	4,193	...	...

*New Fair Centres.

Assistance was also given to the School Fair at Carstairs which was held by the U. F. A. and U. F. W. A. of that place. This will be taken over as one of our regular fairs for 1921.

The Department of Agriculture each year gives a diploma to the school having the best exhibit in all classes, at each fair.

The following is a list of the winning schools at the various centres:

<i>Name of Fair Centre</i>	<i>Name of Winning School</i>
Strathmore	Arenstad, No. 1995
Olds	Berrydale, No. 409
Castor	Beaverdale, No. 2332
Donalda	Willow Park, No. 880
Stettler	Pilot Knob, No. 1679
Delburne	Delburne Consolidated No. 37, Intermediate room.
Elnora	Lake View.
Sundre	Sundre, No. 3848.
Consort	Silverdale, No. 2825
Monitor .....	.....
Bowden	Buffalo Creek, No. 1986
Chinook	Chinook Consolidated, No. 16, room 3

Fair Acres	Glenada
Oyen	Oyen Primary
Coronation	
Acadia Valley	
Youngstown	Social
Clive	Clive, No. 701, Intermediate
Three Hills	Mount Olive, No. 1971
Milnerton	Milner, No. 909
Innisfail	Little Red Deer, No. 362
Red Deer	Willowdale, No. 303
Trochu	Harrow, No. 1996
Carstairs	Greenwood

Owing to there being so few live stock exhibits at some of the fairs the \$25.00 grant by the Department of Agriculture for live stock prizes at each fair was not all called out.

The following is a list of the live stock awards at the various fairs:

<i>Name of School</i>	<i>Amount</i>
Coronation ..	\$ 7.75
Youngstown ..	14.00
Red Deer	25.00
Three Hills	15.25
Trochu	14.75
Bowden	11.75
Clive ..	18.00
Sundre ..	18.50
Delburne ..	17.50
Castor ..	19.50
Strathmore ..	18.45
Elmora ..	14.25
Olds ..	18.00
Donalda ..	8.25
Stettler	5.50
Innisfail	17.50
Consort ..	25.00
Monitor ..	25.00
Chinook ..	15.00
Fairacres ..	1.50
Oyen	11.25
Acadia Valley ..	22.25

The fairs on the whole were very successful, and each reflected the enthusiasm and interest put into it by the members of the local committee. As the work becomes better known, and the committees gain experience, the work is sure to improve.

BOYS AND GIRLS' PIG CLUB

On request of W. G. McArthur of Innisfail a Boys and Girls' Pig Club was organized at that point. The Olds staff helped in the work of organizing and purchased the pigs and delivered them at Innisfail.

The club members consisted of nine boys and girls. Pigs were supplied as follows:—

<i>No. of Pigs</i>	<i>Breeds</i>
10.....	Pure Bred Berkshire
3.....	Pure Bred Duroc Jersey
8..	Grades

Of the pure-bred pigs furnished, there was one boar and twelve sows. The average cost of pure bred pigs to members was \$21.77. The average cost of grade pigs was \$11.25.

The Bank paid for the pigs, and took a note from each club member for six months at 6 per cent. An insurance charge of \$1.00 per pig was added to the notes in the case of pure bred pigs to cover loss by death if occurring within the first six months.

The pure-bred pigs were ear tagged and registered in the name of the boy or girl owner.

Two pairs of these pigs were shown at the Innisfail School Fair Sept. 25th, and won many favorable comments as well as some of the best prizes.

Most of the pure-bred pigs were purchased from members of the Bowden and Olds Pig Clubs.

While these organizations have not all been kept up it is gratifying to know that a number of boys and girls in each of the older Pig Clubs were "making good" with pure-bred pigs, and are staying with the game.

The following is a brief report on some of the experimental work that is under way at this station.

METEOROLOGICAL RECORDS

These records have been taken daily at the Olds School of Agriculture for the past seven years. In this work the maximum and minimum temperature, precipitation, evaporation and sunshine are recorded. This information is sent monthly to the Dominion Meteorological Branch, Toronto, Ontario. The following tables give some information on the precipitation, evaporation and temperatures recorded during the past few years.

PRECIPITATION RECORDS

	1914	1915	1916	1917	1918	1919	1920	Average Monthly
January	0.49	0.75*	0.60	1.16	.75*	2.05	0.96	
February	0.66	0.30*	0.20	0.25	.42	0.95	0.46	
March	0.85*	0.60	1.00	0.15	0.05	1.95	0.76	
April	0.29	1.00	0.60	.75*	0.18	1.02	1.63	0.77
May	0.92	4.27	5.49	4.86	2.46	1.71	1.40	3.00
June	3.49	8.09	4.53	1.88	0.76	0.96	0.48	2.88
July	1.29	7.04	4.61	0.86	0.95	1.36	3.25	2.76
August	0.58	2.50*	8.56	2.44	2.46	4.43	0.62	3.08
September	1.49	1.25*	1.50*	2.14	0.69	1.43	0.72	1.31
October	1.50	0.73	0.93	0.31	0.50	1.05	1.53	0.93
November	1.70	0.52	0.80	0.65*	0.05	1.37	0.20	0.75
December	1.90	0.02	0.90	.50*	0.50	0.59	0.30	0.67
Totals	13.16	27.42	29.57	16.19	9.60	15.14	15.07	18.33

*Estimated.

TABLE SHOWING MONTHLY RANGE OF TEMPERATURE
OLDS, ALBERTA.

	January			February			March			April			May			June			July			August			Sept.			October			November			December		
	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean			
1914	*	*	*	*	*	*	*	*	*	5	72	*	23	76	47	57	85	54	34	91	5	30	88	56	26	79	49	21	74	43	-12	63	30	-16	35	30
1915	-19	42	14	6	41	16	-3	64	18	79	31	79	39	77	47	31	79	48	34	75	*	*	*	10	70	49	19	70	43	-10	55	30	-11	55	23	
1916	*	*	*	23	60	17	-18	60	20	70	32	70	23	71	45	32	70	50	37	83	30	78	54	*	*	*	5	76	39	-10	55	29	-26	45	11	
1917	-10	50	13	-11	47	8	-11	45	9	70	34	80	19	74	46	34	80	52	38	83	33	83	56	25	81	49	28	73	41	7	55	29	*	*	*	
1918	30	53	42	32	50	42	22	59	7	70	36	84	22	76	44	36	84	55	28	91	39	90	57	25	79	51	9	72	43	4	56	30	2	47	*	
1919	*	*	*	-31	58	8	-28	55	11	70	29	89	18	84	47	29	89	53	38	95	55	87	58	18	75	48	-12	70	30	-20	56	16	-36	40	*	
1920	-39	44	8	-9	49	20	-25	49	17	48	31	79	22	72	41	31	79	55	42	82	31	88	59	25	82	50	25	51	38	15	36	4	26	15	15	

*Records incomplete.

EVAPORATION FROM FREE WATER SERVICE AT OLDS

Month	1919	1920
May	3.69"	2.72"
June	4.08"	4.03"
July	4.93"	4.92"
August	3.98"	4.71"
September	2.12"	3.30"
	18.80"	19.68"

WATER REQUIREMENTS OF CROPS

Results of Work Conducted by E. S. Hopkins and Sydney Barnes in 1919-20.

GENERAL OUTLINE OF WORK

The experiments are designated to learn which crops use water most economically and to throw light on problems of crop rotation. The work received from the Honorary Advisory Council for Scientific and Industrial Research a grant of \$500.00 which was devoted entirely to the purchase of equipment.

Crops are grown in galvanized iron cans 30" in height and 15" in diameter. The top of the can is closed by a lid through which holes are bored to allow the plant to grow. Access of rain and escape of evaporation are prevented by sealing these openings with a mixture of tallow and beeswax which has been found to be soft enough to allow the young germinating plants to penetrate and yet hard enough to resist the action of rain. The soil used to fill the cans is taken from the field in layers thoroughly shoveled to secure a soil of uniform composition in each can, and filled into the cans in the order in which it was taken from the field. About 200 lbs. of dry soil are required to fill these cans.

Water is added at the top of the can through an opening in the lid. The water falls into a small flower pot immediately beneath the centre of the lid and percolates through openings in the bottom through several inches of gravel below the pot in order that the moisture may reach some depth into the can. Large Florence flasks are provided with one-holed rubber stoppers through which a glass tube projects. The Florence flasks are filled with water, inverted over the opening in the centre of the can and the water runs away as it percolates into the soil, with a saving of time and without loss of water.

The cans are weighed every second day with a steel-yard scale having a sensitivity of one quarter of a pound. Most of the cans were placed in an enclosure, the walls of which were 3' in height and upon which was stretched a strip of cheesecloth 30" in height. The enclosure afforded some protection from violent wind which might damage the young plants growing in the cans though no difference was noted between crops growing inside and outside the enclosure.

Water Requirements at Olds, Alberta, compared with other places.

	Lawes 1850	Wollyn 1886	Wiscon. 1892-1895	Widtsoc 1909	Briggs & Shantz Colorado	Hellriegel 1883 Germany	Hopkins and Barnes 1919 1920 Alberta
	England	Germany	King	Utah			
Wheat	235	...	...	546	507	359	271 365
Oats .....	...	665	541	...	614	401	306 360
Barley	258	774	388	...	539	297	226 372
Peas	235	416	477	843	800	292	240 336
Spring Rye .....	...	...	...	...	724	377	...
Fall Rye .....	...	...	...	...	...	...	...
Corn .....	...	233	530	386	369	...	179 193
Alfalfa .....	...	...	...	...	1068	...	478 595
Sweet Clover .....	...	...	...	...	709	...	451 303
Timothy .....	...	...	...	...	...	...	295 343
Brome Grass .....	...	...	...	...	...	...	...
Western Rye Grass .....	...	...	...	...	...	...	...
Sunflower .....	...	...	...	...	...	...	...
Potatoes .....	...	...	...	...	...	636	276

It will be noticed that with the exception of Lawes work at Rothamstead, England, the water requirements in Alberta are markedly lower than those found in various parts of the United States and in Germany. The low results secured by Lawes may be accounted for by the fact that he grew only one plant in 40 pounds of soil while at Olds twenty-five plants were grown in 200 pounds of soil. Lawes did not approximate field conditions; by having so much soil for one plant he supplied a large amount of nutrients which reduce the water requirements.

COMPARISON OF METEOROLOGICAL RECORDS

It might not be out of place to make a comparison of the meteorological records at Akron, Colorado, and Olds, Alberta. Briggs and Shantz conducted extensive investigational work at Akron, Colorado. Akron was elected by the Bureau of Plant Industry as representative of the Great Plains Area in The United States.

	Altitude Feet	Av. Annual Precipitation	Precip. May 1 Sept. 1	Av. Evap. May 1 Sept. 1	Mean Annual Temp.
Akron, Colorado ..	4600	18.28	9.02	31.42	50
Olds, Alberta	3400	18.33	10.3	16.66	36.

There are other factors favorable to Alberta not mentioned in the foregoing figures. The amount of sunshine in the growing season is much greater in Alberta, the evaporation does not continue throughout so long a period of the year, and the periods of very high temperature are not so frequent or so extreme.

While precipitation is not so abundant as one might wish at times, a comparison of our precipitation with other places is not so unfavorable.

	Edmonton, Calgary, Olds,			Rotham-	Toronto, Med. Hat.	
	1888-1902	1888-1902	1914-1920	stead, Eng.	Ont.	1888-1902
January .....	.74	.43	.96	2.4	2.76	.65
February .....	.72	.58	.46	1.7	2.49	.84
March .....	.66	.66	.76	1.7	2.54	.71
April .....	.83	.60	.77	2.0	1.98	.67
May	1.87	1.95	3.00	2.4	2.91	1.68
June	2.88	2.72	2.88	2.5	2.66	2.83
July	3.47	2.59	2.76	2.6	2.66	2.10
August	2.08	2.06	3.08	2.7	2.53	1.54
September	1.47	1.18	1.31	2.6	2.78	1.19
October .....	.68	.42	.93	3.0	2.42	.56
November .....	.61	.72	.75	2.3	2.86	.93
December .....	.72	.56	.67	2.0	2.58	.60
Annual	16.71	14.47	18.33	28.4	31.1	14.30

AVERAGE PRECIPITATION AMPLE FOR PRODUCTION OF CEREALS

In order to get a sufficiently long period to make reliable deductions one might take the twenty-year period at Edmonton instead of the seven-year average at Olds. It will be noticed that, on the average 10.3" of rain fell in the months of May, June, July and August.

Now if it is assumed that oats have a water requirement of about 300 pounds it is evident that a ton of water will produce 6 $\frac{2}{3}$ pounds of dry matter of oats; that 113 tons of water, equivalent to the quantity of water that would cover one acre one inch deep, would produce about 750 pounds of dry matter while 10" of rain would produce 7,500 pounds of dry matter. Of course these figures are not to be relied upon implicitly; production depends upon other factors than water, the soil must be in good fertility, and the temperature must be optimum without the occurrence of periods, even of brief duration, of extreme heat accompanied by wind. However, in most parts of Alberta fertility is almost twice that in Ontario or the Central States; a few analyses show that soil in the vicinity of Olds contains about .4% nitrogen and about 10-13% organic matter, while soils in Ontario and the Central States go about .2% nitrogen and about .4% organic matter. If the land is properly cultivated the fertility should not present serious drawbacks for some time yet. Periods of extreme drought, and to a more limited extent periods of hot dry winds, are most liable to reduce yields.

FARM CROPS MAY BE DIVIDED INTO GROUPS WITH RESPECT TO WATER REQUIREMENTS

It will be observed from a review of the figures showing the water requirements that corn stands lowest, then comes the group of cereals and finally the group with the legume hays. This generalization finds confirmation in the work of all investigators on this problem. Roughly the water requirements at Olds are about one-half of that found at Akron, Colorado, but it will be seen that the three groups appear in the same order at both places.

THE NECESSITY OF UTILIZING THE STRAW OF CEREALS

A point that should be borne in mind in connection with these figures for cereals is that while the water requirements are moderately

low for total dry weight of the crops, it is fairly high for the dry weight of grain. Oats, which show for 1919 a water requirement of 306 pounds per pound of dry matter when the total weight of the crop is considered have a water requirement of 115 pounds per pound of dry matter of grain. This would appear to emphasize the necessity of utilizing the straw and tend to point to a superiority for oats and barley whose straw is more valuable and more acceptable to stock.

While tables of composition of straw grown in this locality are not at hand, general average compositions show that the amount of digestible nutrients in straw compares very favorably with that in grain.

	Digestible Nutrients	
	in 100 parts of grain	in 100 parts of straw
Wheat	80.1	36.9
Oats	70.4	45.6
Barley	79.4	42.5

Moreover, there is more total weight of straw produced than there is grain. Taking oats as an example, out of 100 lbs. of total dry weight of the oat crop there would be 44 pounds of grain and 56 pounds of straw. Multiplying these numbers by the percentages of digestible constituents contained therein it is found that the grain contains 30.9 pounds of digestible constituents while the straw contains 25.5 pounds of digestible constituents. These figures show in a striking manner the value of the straw and necessity of feeding it to stock. It must be remembered, however, that the nutritive ratio of the grain is 1:6.3 while that of the straw is 1:44.6 making desirable a mixing of straw with some protein-rich food, especially for growing animals.

VALUE OF DIFFERENT VARIETIES

It appears from the work of Briggs and Shantz that varieties of cereals exhibit some difference in water requirements particularly when based on the grain production. Not enough work has been done to enable reliable conclusions to be drawn especially when the problem may be complicated by the fact that a variety having a somewhat higher water requirement might be a larger yielder and therefore preferable. Montgomery of Cornell has done some work with broad and narrow leafed varieties of corn. Narrow leafed varieties were most economical of water and out yield the broad leaved varieties two years out of three, the exception being a wet year when the broad leaves appeared to be more favorable.

PLOWING DOWN CROPS FOR GREEN MANURE A BAD PRACTICE

The practice of plowing down crops for green manure to increase the supply of organic matter in the soil is not sound considering the loss of water from the soil and the reduced yield in the subsequent crop the following year. It is clear that the green manure crop will use up a large amount of water to make its growth and also a supply of available nutrients. When Spring Rye is used as the green manure crop it consumes an exceedingly large amount of water for, according to Briggs and Shantz, Spring Rye has a much higher water requirement than Oats or Wheat.

COMPARISON OF MOISTURE CONTENT OF LAND IN SUMMERFALLOW AND
IN GREEN MANURE

		Percent. of Moisture at Depth of			
		6"	12"	24"	36"
June 12	Summerfallow plot	36.6	25.9	14.6	12.5
	Green manure plot	31.4	22.0	13.1	8.3
June 28—	Summerfallow plot	30.9	25.6	14.9	14.3
	Green manure plot	16.8	11.8	11.6	14.1
Sept. 13—	Summerfallow plot	40.0	30.9	25.3	13.3
	Green manure plot	35.2	26.6	17.6	11.8

The yields of crops following summerfallow are, according to the work of the Dominion Experimental Farms and the Office of Dry Land Agriculture in the United States, just as large as where green manuring was practiced. However, this statement is not meant to cover those abnormal cases of extremely low organic matter content which require correction before normal yields may be secured.

SOME CROPS, THOUGH POSSESSING APPROXIMATELY SIMILAR WATER REQUIREMENTS MAY BE ABLE TO EXTRACT MORE WATER FROM THE SOIL.

It is obvious that even though one crop has the same or a higher water requirement than another if it is able to extract more moisture from the soil, it is more valuable in dry seasons. Examinations of the moisture content of the soil on which Brome Grass and Timothy were growing have been made. Brome Grass produced a considerably large yield and extracted the moisture from the soil to a greater degree. The following figures show this.

MOISTURE CONTENT OF SOIL ON JULY 3rd.

		Percentage of Moisture at Various Depths and Yields.			
		6"	12"	24"	36"
Timothy	17.0	13.4	16.3	14.5	.65 tons
Brome Grass	11.4	8.7	9.1	9.0	3.37 tons

In order to determine this power to produce good yields at moderately low soil moisture contents representative crops are being grown in pots with the moisture contents held at 15%, 25%, 33% and 46%. It must not be expected that any crops can produce growth without water; water is indispensable but it seems evident that some crops can produce more abundantly than others when the moisture content is moderately low. According to Darwin's law of the survival of the fittest certain plants through ages of acclimatization have become adapted to certain environments.

THE VALUE OF FERTILE SOIL

A fertile soil requires considerably less water to produce a pound of dry matter than does a poor soil. A rich soil, to a certain extent, tends to overcome the effects of a not too long protracted drought.



SUNFLOWERS AND CLOVER

For this reason every effort should be made to keep the soil as fertile as is consistent with profits, by applications of farm manure and through rotations of crops. Good cultural practices also tend to render more available the insoluble nutrients in the soil and, in effect, to make it more fertile.

LATE SEEDED OATS HAVE LOWER WATER REQUIREMENTS

Oats seeded in cans on June 28 had a water requirement of about only two-thirds that of oats seeded in cans on May 15. The early seeded oats had a water requirement of 306 lbs. while the late seeded had a water requirement of only 203 lbs. However, the early seeded oats produced about twice the yield of those seeded later. These crops were of course, provided with optimum amounts of water in the soil, and comparison cannot be made with field conditions where the soil was dry during the early period of growth and wet during the later. This fact confirms the work of Briggs and Shantz at Akron, Colorado. Barley and wheat, according to these investigators, require more water when seeded late.

The low water requirement of oats when seeded late seems to show that green feed oats are not as hard on the land as are oats seeded normally in spring. This would be true not alone for water conservation but for the nutrients in the soil. As large yields can be secured by the earlier seeding, the early seeding is recommended.

THE VALUE OF FALL RYE

Experiments are in progress to determine the effectiveness of Fall Rye as regards water consumption. Fall Rye has many obvious advantages such as being able to grow successfully in weedy land, in distributing labor throughout the season both in seeding and in harvesting, and in minimizing the risk from hail and frost compared with cropping systems where all the crops mature at about the same time. Moreover, the value of fall rye, for fall and spring pasture is exceedingly important and the value of the grain is about equal to barley as hog feed.

In addition to these virtues fall rye appears to be more drought resistant than spring sown cereals, a factor that cannot be underestimated here. Casual observation throughout the country in dry years and the experiments of the North Dakota Experiment Station appear to prove this. North Dakota secured the following results.

Crops	Yield Bushels per Acre								
	1888	1889	1890	1891	1892	1912	1913	1914	Av.
Winter Wheat	15.1	15.1	9.0	15.1	Rust	29.3	34.2	30.8	18.8
Winter Rye	18.0	14.1	24.0	14.1	15.1	44.6	38.3	41.9	26.3
Spring Wheat, Fife.,	3.2	10.1	9.5	21.0	Rust	18.5	27.6	12.7	12.8
Spring Wheat, Blue-stem	5.9	9.9	21.1	21.5	Rust	19.6	23.3	6.7	13.5

The figures showing the rye and wheat production of Canada compared with Russia, a country of somewhat similar climatic and soil conditions to that of Western Canada present striking contrast. Russia grew as an average annual production for the years 1906-1910 a rye

crop of 742 million bushels and a wheat crop of 557 million bushels, while Canada produced in 1910 a rye crop of one and one-half million bushels and a wheat crop of 132 million bushels. There may be a good reason beyond the fact that Europe consumes rye flour why Russia produces more rye than wheat; rye may use water more economically than wheat and, if so, it would be very valuable for the Canadian West.

FALL RYE

Dates of Seeding

Variety	Rate Sown	Date Sown	Yield per Acre.
959.....	1 bushel.....	June 15	25 bushel
959.....	1 bushel.....	July 15	45 bushel
959.....	1 bushel.....	Aug. 15	54 bushel
959.....	1 bushel.....	September 15	35 bushel
959.....	1 bushel.....	October 15	22 bushel

VARIETIES FALL RYE

Variety	Rate Sown	Date Sown 1919	Date Ripe 1920	Winter Killing	Yield per Acre
Rosen (Minn.) ...	1 bus.	Aug. 15	Aug. 16	Considerable	57 bus.
Steele Briggs	1 bus.	Aug. 15	Aug. 16	None	58 bus.
Rosen (Noble)	1 bus.	Aug. 15	Aug. 16	Considerable	57 bus.
Dem. Farm	1 bus.	Aug. 15	Aug. 16	None	58.5 bus.

The superiority of the well acclimatized seed over the Rosen strains would be very much more outstanding if the killed out areas in the Rosen plots had not been deducted before computing the yields from those plots. The results would indicate that the old varieties at Olds are less likely to winter kill than the new varieties recently introduced from the United States.

There are many other experiments with fall rye under way. These experiments were started in 1919. This gives only one year's results and we are not publishing them. The experiments are as follows:

Dates of seeding are made in the months of June, July, August, September and October for hay and seed. Sixteen plots are seeded at each date. The first eight in each case are treated as follows:—No pasture for seed, pasture in fall for seed, pasture in spring for seed, pasture spring and fall for seed, plots 5 to 8 inclusive are treated in the same way but they are cut green for hay. The other eight plots seeded at each date are duplicates of the above. There are also over twenty varieties of fall rye under trial. Tests with rates of seeding and crop following fall rye are being conducted. Experiments in seeding to fall rye with spring-sown grain crops at different dates and rates are under way.

In order to learn the water requirements of fall rye the following experiments are being conducted which will throw light on a number of points.

1. Fall rye is grown in cans with sealed tops at low and optimum moisture contents.

2. Fall rye is grown in cans without tops and no water added beyond what falls as rain.
3. Fall rye is grown in cans without tops and water added to rainfall to make moisture content optimum.
4. Cans are exposed with no crop planted and no water added beyond what falls as rain.
5. Cans are exposed with no crop planted and no water added to rainfall to make moisture content optimum.
6. Spring rye is grown in cans without tops and in cans with sealed tops.

From the table on water requirements it will be observed that fall rye is quite low in its water requirements. This possibly is on account of growing in the cool of the fall and spring when transpiration is reduced. Moreover, the fall rye attains its maximum development when the number of hours of sunshine is longest and therefore at a time when the greatest photosynthesis take place. A further point is that fall rye stands in the ground about twelve months and can therefore utilize a greater proportion of the annual precipitation.



WESTERN RYE GRASS

A point of considerable importance in securing large yields is the absence of hot dry periods while the grain is filling. An examination of the weather records at Olds for the years 1914-1920 inclusive while showing a remarkable freedom from such days appears to point to a greater frequency during the period when the fall rye is ripening.

EXTREME TEMPERATURES IN JULY AND AUGUST AT OLDS, ALTA., 1914-20.

No. of days when designated temperatures occurred.				
	75—80	80—85	85—90	90—95
July 1 to 15	19	16	2	1
July 15 to 31	22	16	3	3
August 1 to 15	18	7	5	1
August 15 to 31	11	10	1	0

ROTATIONS AND SOIL INVESTIGATIONS

The following is an outline of the experiments with soils and rotations that were started at Olds in 1919. There are results from the 1920 crops but it seems inadvisable to publish the data from one year's work with rotations and other soil investigations.

ROTATIONS.

1. Wheat; oats and barley seeded to timothy, red clover and alsike; oat green feed and hay; pasture and summerfallow.
2. Hay; pasture; oats; oats; barley seeded to timothy, red clover and alsike.
3. Wheat; oat green feed; barley seeded to timothy and western rye; hay; pasture.
4. Barley, oats; wheat seeded; sweet clover and western rye.
5. Oats; potatoes; barley seeded; timothy and western rye; timothy and western rye; fall rye planted preceding summer on sod broken early in July.
6. Hay; hay; pasture; oats; oats; barley seeded timothy, red clover and alsike.
7. Potatoes; wheat seeded; brome; brome; oats.
8. Oats; wheat; summerfallow.
9. Oats; barley; summerfallow.
10. Oats; wheat; barley; summerfallow.
11. Oats; summerfallow.
12. Oats; barley; sweet clover and alsike.
13. Wheat; wheat; summerfallow.
14. Continuous summerfallow.
15. Wheat continuously manured in four years at 10 tons per acre.
16. Wheat continuously.
17. Oats continuously.
18. Barley continuously.
19. Alfalfa continuously.
20. Brome continuously.

GREEN MANURE

	Oats.
First year	Oats.
	Wheat.
Second year	Wheat.
	Green manure—peas.
Third year	Green manure—rye.

DEPARTMENT OF AGRICULTURE

FERTILIZERS

				Oats					
				Wheat					
				Barley					
A.	B.	C.	D.	E.	F.	G.	H.	I.	J.
A.	Check.								
B.	N, 300 lb. nitrate per acre., 12 oz. on plot.								
C.	P, 300 lb. superphosphate per acre., 12 oz. per plot.								
D.	Check.								
E.	N. & P, 12 oz. of Na NO ₃ 1 oz. of superphosphate.								
F.	Lime 2 tons per acre, 10 lbs. on plot.								
G.	Lime and manure, 10 lbs. lime and 100 lbs. manure.								
H.	Check.								
I.	Manure, 10 tons, 50 lbs. on plot.								
J.	Manure, 20 tons, 100 lbs. on plot.								

SUMMERFALLOW VS. INTERTILLED CROPS

	Oats
	Oats
	Oats
	Oats
	Oats
	Oats
	Wheat
	Wheat
	Wheat
	Wheat
	Wheat
	Wheat
	Wheat
	Summerfallow
	Corn
	Roots (turnips)
	Sunflower
	Green feed (oats and peas)
	Potatoes

SUMMERFALLOW TREATMENT

Oats

Oats

Oats

Oats

Oats

Oats

Oats

Wheat

Wheat

Wheat

Wheat

Wheat

Wheat

Wheat

Plow shallow in June and cultivate as required.

Plow deep in June and cultivate.

Summerfallow

Plow August 1st, and cultivate.

Plow deep in June and merely clip the weeds with hoe, do not cultivate.

Plow deep in June and leave untilled.

Plow shallow in June, harrow September, plow and harrow.

FARM MANURES

Apply manure 10 tons in fall to oats stubble; fall plow.

Oats

Wheat

Summerfallow

Top dress wheat.

Oats

Wheat

Summerfallow

Apply manure 10 tons in Spring to oats stubble; and Spring plow.

Oats

Wheat

Summerfallow

Apply manure 10 tons to summerfallow before plowing.

Oats

Wheat

Summerfallow

Apply manure 15 tons in Spring on wheat; spring plow.

Oats

Wheat

Turnips

Apply manure 15 tons in spring to wheat stubble and spring plow.

Oats

Wheat

Sunflower

Apply manure 15 tons in Spring to wheat stubble and spring plow. Apply manure 15 tons in spring to wheat stubble and spring plow. Manure half of rape, plow only.

Oats
Wheat
Potatoes

Oats	
Wheat	
Manured	No Manure
Rape in rows	

CULTURAL METHODS

All Treatments Refer to Barley and Wheat Stubble.

Fall plow 8 inches, harrow in fall; harrow, seed and harrow spring. Fall plow 4 inches, harrow in fall; harrow, seed and harrow in spring.

Barley
Wheat
Oats
Summerfallow

Barley
Wheat
Oats
Summerfallow

Fall plow 6 inches; harrow and pack in fall, harrow, seed, harrow and pack in spring. Fall plow 6 inches; leave untilled in fall, harrow, seed and harrow in spring.

Barley
Wheat
Oats
Summerfallow

Barley
Wheat
Oats
Summerfallow

Spring plow 8 inches; harrow, seed and harrow. Spring plow 4 inches; harrow, seed and harrow.

Barley
Wheat
Oats
Summerfallow

Barley
Wheat
Oats
Summerfallow

Barley and wheat stubble burned in spring, plowed, harrowed, seeded and harrowed. Barley and wheat stubble burned in spring; disced, harrowed, seeded and harrowed.

Barley
Wheat
Oats
Summerfallow

Barley
Wheat
Oats
Summerfallow

Barley and wheat stubble seeded.

Barley
Wheat
Oats
Summerfallow

SUBSOILING EXPERIMENTS

Subsoil 4 inches (merely stir earth, do not throw it on the surface) at time of plowing summerfallow.

Oats
Wheat
Summerfallow

Subsoil 4 inches (merely stir earth, do not throw it on the surface), oat stubble when plowing in fall.

Oats
Wheat
Summerfallow

It will be observed from the above outline of the investigations with soils that the work is most complete and in the course of a few years it should yield some very valuable information.

GRASSES

In a district such as Olds where mixed farming is followed by ninety-nine percent of the farmers, and where each farmer is forced (owing to the absence of raw land) to raise both the grain and roughage required for his stock on the land he actually owns or rents at a high rate per acre, the question of hay and pasture crops are very important. At this station the importance of conducting work with grasses is fully realized and there is already available some important data.

In growing hay it is very important to have a variety or a kind of grass that is adapted to the conditions in the district and on the farm a man finds himself. The following table shows the results of tests with some of the grasses at Olds during the past few years:

VARIETY TESTS

Kind of Grass	1920 Tons	1919 Tons	1918 Tons	1917 Tons	Average yield per acre. Tons
Timothy	2.5	.6	.4	3.9	1.85 4 year ave.
Western Rye Grass	3.125	2.5	1.8	2.9	2.60 4 year ave.
Brome Grass	3.97	3.3	2.1	4.0	3.31 4 year ave.
Meadow Fescue	2.25	.27	...	...	1.26 2 year ave.
Kentucky Blue	3.00	.51	...	3.33	2.28 3 year ave.
Sheep Fescue	1.7	.42	...	...	1.06 2 year ave.
Creeping Bent	1.9	.42	...	...	1.16 2 year ave.
Red Top	1.5	.50	...	...	1.00 2 year ave.
Orchard Grass .....	...	...	.66	1.66	1.16 2 year ave.
Canadian Blue .....	...	...	1.66	2.16	1.91 2 year ave.

It is interesting to note that timothy, which is the popular grass and hay crop in this district, in the four years' average falls considerably below western rye grass and brome grass.

The value of the hay crop on the soil is being tried out in various ways. The results of this work does not cover enough years to make the work absolutely reliable. On the Dominion Experimental Farms they claim that the hay crop improves the quality of the soil to such an extent that the second crop of grain following gives higher yields than in the case where the grain follows summerfallow. The introduction of the grass tends to make the soil approach its virgin condition. Soils in this condition very seldom blow. The hay crops in districts

having an average rainfall, moderate temperatures during the growing season and an absence of high drying winds is a very profitable crop in itself—the value per acre being frequently quite equal to that of wheat.

SEEDING TO GRASSES

In seeding to grasses it is generally considered advisable to use a nurse crop. In doing this a crop is saved when seeding down. The results at this station during the past three years indicate a much better return from seeding without a nurse crop. The past three years, however, have been exceptionally dry and no doubt in normal years the results would not be so markedly one-sided. In all seasons it is advisable when seeding with a nurse crop to do so with either the first or second crop following the summerfallow, corn or potatoes. This practice ensures a better stand and a heavier yield of hay the first and second years after seeding down. The depth of seeding grass seed is a consideration worth while. As a general rule grass seed should be seeded to a depth of from 1½ to 2 inches. This deep seeding is much more likely to germinate in a dry year. As an additional precaution against poor "catches" the early seeding is a point worthy of note. The early seeding places the seed in the ground at a season when the soil is somewhat moist at the surface and it gives the crop a much longer growing season for the development of a strong root system.

SEED FROM BROME AND TIMOTHY IN 1920.

Crop	Yield per acre.
Timothy	3.14 bushels
Brome	6.25 bushels

In a year or two the results of the tests with grass and clover mixtures and grass mixtures will be available.

CLOVERS AND ALFALFA

For the past six years alfalfa has grown successfully in the plots. It has winter killed on no occasion. Owing to the dry weather the yields have been very light during the past three years.

Clovers are under test and the results from these crops are not at all encouraging. The alsike clover has given the best returns thus far in withstanding adverse conditions.

Sweet clover is a promising crop. For the past four years the white and yellow blossomed kinds have been grown. The white blossomed varieties are somewhat coarser growers but they have proven to be more subject to winter killing than the yellow strains. The crop has been cut for seed, and for hay. In both respects the results are very encouraging. The crop was pastured off with sheep on one occasion. The sheep did not relish it when first turned on but soon acquired a taste and ate it readily afterwards.

ALFALFA VARIETIES

Variety	Years		Average
	1919	1920	
Turkestan .....	.26 tons	1.188 tons	.724 tons
Montana .....	.25 tons	1.056 tons	.653 tons
Baltic .....	.38 tons	7.08 bus.	.38 tons
Liscombe .....	.41 tons	1.617 tons	1.013 tons
Cossack .....	.74 tons	1.683 tons	1.211 tons
Sweet Clover (Yellow Blossom) ..			2.79 tons

ALFALFA AND CLOVERS FOR SEED

Alfalfa Grimm	2.6 bus.
Yellow Sweet Clover	21.87 bus.
Common Red Clover	10.12 bus.
Alsike clover	7.77 bus.

Sweet Clover	Rate of Seeding	Yield per acre
Yellow Blossom	8 lbs. per acre	2.15 tons
Yellow Blossom	12 lbs. per acre	2.75 tons
Yellow Blossom	16 lbs. per acre	3.00 tons
Yellow Blossom	20 lbs. per acre	3.25 tons

SUNFLOWERS

The sunflower crop has received a great deal of publicity during the past two years. The yields per acre in 1919-20 are given below. It is claimed that sunflower ensilage, when fed to dairy cows, produces more milk than oat or corn silage. It is further claimed that the butter fat in the milk is higher than it is in the milk from the same cows when fed oat or corn silage. The yields of sunflowers in the green state are from two to three times heavier than the crops of oats or peas and oats that are grown on similar soils. This high yielding characteristic combined with the superior feeding value of the silage is destined to make the crop popular once the silo comes into general use. In one hundred pounds of green sunflowers there are from 75 to 85 pounds of water while in a similar weight of oats, cut in the dough stage, there is from 60 to 65 pounds of water. However, this high percent. of dry matter in the oats is not sufficient to make up for their lower yields.

The coarseness of the sunflowers caused them to have a somewhat limited use. Ordinarily they are used as silage, but they may also be used as a soiling crop. We have cut and fed them to hogs during the summer months, and observed that the hogs ate them readily. Sheep have been pastured on the crop with good results.

The crop should be sown in the early part of May. It should be sown in rows three feet apart with the stalks seven to nine inches apart in the rows. It will require from five to eight pounds of seed to sow an acre when seeding in such a manner.

SUNFLOWERS 1919

Date Sown	Method	Yield
May 13	In rows	19.7 tons

SUNFLOWERS FOLLOWING OTHER CROPS

	<i>Yield</i>
Wheat stubble spring plowed	15.25 tons
Potato land spring disced	18.43 tons
Spring plowed cultivated grass land	17.33 tons

CROPS FOLLOWING SUNFLOWERS

	<i>Planted to</i>	<i>Yield</i>
Sunflower stubble spring plowed	I. C. Potatoes	204.4 bus.
Sunflower stubble spring plowed	G. R. Oats	74.59 bus.
Potato land spring harrowed	G. R. Oats	111.50 bus.
Sod land spring plowed	G. R. Oats	63.72 bus.

DATES OF SEEDING

<i>Dates of Seeding</i>	<i>Methods of Seeding</i>	<i>Yields</i>
May 15th	Drills 3 feet apart	19.87 tons
May 31st	Drills 3 feet apart	21.62 tons
June 15th	Drills 3 feet apart	16.60 tons
June 30th	Drills 3 feet apart	14.20 tons

METHODS OF SEEDING

METHODS OF SEEDING		<i>Yields</i>
May 25th	3 feet each way, 3 in hill	18.73 tons
May 25th	Rows 3 feet apart, plants 12 inch in row . .	18.43 tons
May 25th	Rows 3 feet apart, plants 12 inch in row . .	18.50 tons
May 25th	Broadcast (grain drill)	21.33 tons

The sunflowers, except in the case of a few stalks, failed to set or ripen seed in both 1919 and 1920. They were all of the Russian Giant variety. The sunflowers have shown that they resist quite a little frost both in the early and late parts of the growing season. This, in Central Alberta, gives them quite an advantage over some of the other forage crops.

CORN

The varieties of corn that are now offered for sale and generally grown, where corn is grown at all, are not adapted to this district. All of the varieties of the Flint and Dent kinds have failed to even set ears in most seasons. This means that they can only be used for fodder. This fodder is considerably lower in feeding value than oats cut in the dough stage, and since the yield of cured fodder is about the same in each case, and the work entailed in growing the corn is greater, it will be observed that the crop has nothing in its favor. We have ripened certain strains of squaw corn on a number of occasions.

<i>Varieties</i>	<i>CORN YIELDS</i>	<i>Average 3 years</i>
Sioux Squaw		9.25 tons
Giant Prolific		16.66 tons
Red Cob Cory		11.57 tons
Golden Bantam		7.25 tons
Minnesota Early		9.13 tons
Malakoff		9.53 tons
White Cob Cory		10.61 tons
Early Dent Fodder		12.50 tons
North Western Dent		10.00 tons
Early Leaming		11.50 tons
Minnesota No. 13		9.50 tons
Gehu		18.33 tons
N. D. White Flint		10.06 tons
Free Press		5.93 tons

PEA INNOCULATION

<i>Variety</i>	<i>Treatment</i>	<i>Rate Sown</i>	<i>Days Maturing</i>	<i>Yield per Acre</i>
Marrowfat.....	Innoculated	3 bus.	119 days	20 bus.
Marrowfat.....	Non-innoculated	3 bus.	109 days	17.86 bus.

The results in the above table are from two years' work. The figures show a slight increase in yield from the use of inoculated seed. The crop seems to ripen later than the one that is not inoculated.

DEPTHS OF SEEDING

<i>Kind of Crop</i>	<i>Depth of Seeding</i>	<i>Rate</i>	<i>Yield per Acre</i>
Oats (Banner)	1 inch	3 bus.	69 bus.
Oats (Banner)	2 inch	3 bus.	81 bus.
Oats (Banner)	3 inch	3 bus.	91 bus.
Wheat (Prelude)	1 inch	2 bus.	10½ bus.
Wheat (Prelude)	2 inch	2 bus.	8½ bus.
Wheat (Prelude)	3 inch	2 bus.	7½ bus.
Barley (Mensury)	1 inch	1¾ bus.	28 bus.
Barley (Mensury)	2 inch	1¾ bus.	27 bus.
Barley (Mensury)	3 inch	1¾ bus.	26 bus.
Peas (Canada Field)	1 inch	3 bus.	21 bus.
Peas (Canada Field)	2 inch	3 bus.	20 bus.
Peas (Canada Field)	3 inch	3 bus.	20 bus.
Peas (Canada Field)	4 inch	3 bus.	23 bus.

The results in depths of seeding is from the years 1918-20 inclusive.

RATES OF SEEDING BARLEY

<i>Kind of Crop</i>	<i>Rate</i>	<i>Days Maturing</i>	<i>Yield per Acre</i>
Barley, O.A.C. No. 21 ...	1 bus.	110	37 bus. per acre, 3 year ave.
Barley, O.A.C. No. 21 ...	1½ bus.	108	37 bus. per acre, 3 year ave.
Barley, O.A.C. No. 21 ...	2 bus.	105	29 bus. per acre, 3 year ave.
Barley, O.A.C., No. 21 ...	2½ bus.	105	28 bus. per acre, 3 year ave.
Barley, O.A.C., No. 21 ...	3 bus.	103	27 bus. per acre, 3 year ave.

RATES OF SEEDING PEAS

Peas (Marrowfat)	1 bus.	125	32 bus. per acre, 3 year ave.
Peas (Marrowfat)	1½ bus.	125	33 bus. per acre, 3 year ave.
Peas (Marrowfat)	2 bus.	125	33 bus. per acre, 3 year ave.
Peas (Marrowfat)	2½ bus.	123	33 bus. per acre, 3 year ave.
Peas (Marrowfat)	3 bus.	122	29 bus. per acre, 3 year ave.
Peas (Marrowfat)	4 bus.	121	33 bus. per acre, 3 year ave.

RATES OF SEEDING WHEAT

Wheat (Ruby)	1 bus.	118	27 bus. per acre, 3 year ave.
Wheat (Ruby)	1½ bus.	117	26 bus. per acre, 3 year ave.
Wheat (Ruby)	2 bus.	116	25 bus. per acre, 3 year ave.
Wheat (Ruby)	2½ bus.	115	25 bus. per acre, 3 year ave.
Wheat (Ruby)	3 bus.	114	25 bus. per acre, 3 year ave.

RATES OF SEEDING OATS

<i>Kind of Crop</i>	<i>Rate</i>	<i>Days Maturing</i>	<i>Yield per Acre</i>
Oats (Banner)	1 bus.	120	59 bus. per acre, 3 year ave.
Oats (Banner)	2 bus.	120	69 bus. per acre, 3 year ave.
Oats (Banner)	2½ bus.	119	63 bus. per acre, 3 year ave.
Oats (Banner)	3 bus.	118	50 bus. per acre, 3 year ave.
Oats (Banner)	3½ bus.	117	63 bus. per acre, 3 year ave.
Oats (Banner)	4 bus.	117	64 bus. per acre, 3 year ave.

The rates of seeding results are from three years' work 1918-19-20. All three years were abnormally dry. This causes the light rates of seeding to give somewhat better results than they do at the Lacombe Experimental Farm when taken over a longer period of years including both wet and dry seasons. The longer period at Lacombe gives something nearer the normal in weather conditions than does our short period, hence it may be that their results are nearer what is right for moist years.

DATES OF SEEDING WHEAT

<i>Kind of Crop</i>	<i>Date Sown</i>	<i>Rate Sown</i>	<i>Days Maturing</i>	<i>Yield per Ac.</i>
Wheat (Ruby)	April 18	2 bus.	128	22 bus.
Wheat (Ruby)	April 18	2 bus.	126	20 bus.
Wheat (Ruby)	April 28	2 bus.	120	22 bus.
Wheat (Ruby)	May 8	2 bus.	113	17 bus.
Wheat (Ruby)	May 17	2 bus.	118	17 bus.

DATES OF SEEDING OATS

Oats (Banner)	April 8	2.5 bus.	130	77 bus.
Oats (Banner)	April 18	2.5 bus.	126	68 bus.
Oats (Banner)	April 28	2.5 bus.	120	68 bus.
Oats (Banner)	May 15	2.5 bus.	110	65 bus.
Oats (Banner)	May 31	2.5 bus.	116	65 bus.

DATES OF SEEDING BARLEY

O.A.C. No. 21	April 20	2 bus.	125	29 bus.
O.A.C. No. 21	April 30	2 bus.	120	33 bus.
O.A.C. No. 21	May 15	2 bus.	115	40 bus.
O.A.C. No. 21	May 30	2 bus.	110	33 bus.
O.A.C. No. 21	June 15	2 bus.	106	28 bus.

The dates of seeding results do not emphasize at all strikingly the superiority of the early seeding over medium, early and late seeding. This is due in part, at least, to the abnormal season of 1920. The above results for the early dates of seeding are for two years while the later dates of seeding show the results of three years' work. This is another reason for the surprising good yields from the late dates of seeding.

WHEAT VARIETIES

In varieties of wheat there are twenty-four under test. The results of three years' work with some of the leading hard milling varieties are given in the following table. The other varieties under test are some of those that are more or less commonly grown in a limited way in some parts of Alberta.

WHEAT VARIETY YIELDS

<i>Variety</i>	<i>Rate</i>	<i>Fallowing S.F.</i>	<i>Days Maturing</i>	<i>Length of Straw</i>	<i>Yield per Acre</i>
Kitchener	2 bus.	S.F.	134	36.66 in.	45.86 bus.
Kubanka	2 bus.	S.F.	133	40.5 in.	42.49 bus.
Red Fife	2 bus.	S.F.	136	35.66 in.	41.08 bus.
Marquis	2 bus.	S.F.	135	35.83 in.	40.44 bus.
Red Bobs	2 bus.	S.F.	133	32.33 in.	40.15 bus.
Ruby	2 bus.	S.F.	127	30.00 in.	34.58 bus.
Prelude	2 bus.	S.F.	119	28.33 in.	24.48 bus.

OAT VARIETIES

The table below gives the names and yields of twelve varieties of oats. These are the results of three years' work except in cases where otherwise designated. They are only a small number out of the thirty-four oat varieties under test.

OAT VARIETY YIELDS

<i>Variety</i>	<i>Rate Sown</i>	<i>Days Maturing</i>	<i>Length of Straw</i>	<i>Yield per Acre</i>
New Industrial	3 bus.	119.8	38 in.	79.23
Banner	3 bus.	119	39 in.	77.94
Gold Rain	3 bus.	118	39 in.	74.75
O.A.C. No. 72	3 bus.	119	37 in.	71.26
Daubeney	3 bus.	109	30.5 in.	50.54
O.A.C. No. 3	3 bus.	109	30 in.	43.15
Victory	3 bus.	120	37 in.	80.84
Abundance	3 bus.	119	37 in.	77.71
Bristol Black	3 bus.	119	39 in.	62.64
Tartar King	3 bus.	120	37 in.	58.05
Liberty	2 bus.	113	35 in.	47.57
Alsaman	3 bus.	120	37 in.	84.26

—The equal mark stands for two years only.

—The minus mark stands for one year only.

BARLEY VARIETIES

Below is a table showing the yields from ten varieties of barley. These are part of the twenty-four varieties under test at this station.

BARLEY VARIETY YIELDS

<i>Variety</i>	<i>Rate Sown</i>	<i>Days Maturing</i>	<i>Length of Straw</i>	<i>Yield per Acre</i>
Barks	2 bus.	116	26 in.	45.29 bus.
W. Winter	2 bus.	116	26 in.	49.64 bus.
Invincible	2 bus.	110	30 in.	45.13 bus.
O.A.C. No. 21	2 bus.	104	30 in.	42.36 bus.
Guy Mayle	1¾ bus.	97	28 in.	35.67 bus.
Salzer's Beardless	2 bus.	101	29 in.	42.24 bus.
Mensury	2 bus.	104	28 in.	33.64 bus.
Chevalier	2 bus.	103	30 in.	36.28 bus.
Swan Neck	2 bus.	103	30 in.	39.15 bus.
*Trebi	2 bus.	100	32 in.	63.01 bus.

*One year's result.

PEAS VARIETIES

<i>Variety</i>	<i>Rate Sown</i>	<i>Days Maturing</i>	<i>Length of Straw</i>	<i>Yield per Acre</i>
Early Blue Alaska	3 bu.	109	30 in.	30 bu.
Multipliers	3 bu.	118	34 in.	30 bu.
Golden Vine	3 bu.	120	36 in.	32.5 bu.
White Alaska	3 bu.	109	30 in.	30.5 bu.
Chancellor	3 bu.	120	37 in.	34.5 bu.
Bangolia	3 bu.	115	36 in.	27.5 bu.
Arthur	3 bu.	119	41 in.	40.5 bu.
Solo	3 bu.	110	33 in.	33.3 bu.
Canadian Beauty	3 bu.	118	32 in.	32.5 bu.
Prussian Blue	3 bu.	120	40 in.	35 bu.
Maple	3 bu.	119	51 in.	35.8 bu.
George	3 bu.	118	48 in.	32.5 bu.
Early Britain	3 bu.	112	40 in.	33.5 bu.

Peas are considered to be an uncertain crop in the Olds district.

GREEN FEED MIXTURES

In the work with forage crops is included tests of some twelve varieties of legumes, cereals and other grain crops. These tests include the growing of the crops alone and in combination with different proportions. There are two years' results from this work available but we will not publish these until we have another year's work to report with them.

POTATOES

The experimental work with potatoes is quite elaborate at Olds. The following tests are under way:

1. Variety tests.
2. Dates of seeding.
3. Rates and methods of seeding.
4. Hill selection as compared to bulk selection.
5. Depths of planting.
6. Barnyard manure and fertilizer treatment.
7. Scab and other disease control.
8. Size of sets, whole vs. cut, etc.

The results from some of the tests are given in the accompanying tables.

DATES OF PLANTING

<i>Year</i>	<i>Variety</i>	<i>Date Planted</i>	<i>Yield per acre</i>
1918	Wee McGregor	April 27	325.1 bus.
1918	Wee McGregor	May 4	277.6 bus.
1918	Wee McGregor	May 11	272.5 bus.
1918	Wee McGregor	May 18	257.5 bus.
1918	Wee McGregor	May 25	327.5 bus.
1919	Sutton's Satisfaction	May 13	361 bus.
1919	Sutton's Satisfaction	May 23	532 bus.
1919	Sutton's Satisfaction	June 2	549 bus.
1919	Sutton's Satisfaction	June 13	605 bus.
1919	Sutton's Satisfaction	June 22	266 bus.
1920	Wee McGregor	May 19	292.49 bus.
1920	Wee McGregor	May 31	224.11 bus.
1920	Wee McGregor	June 15	232.91 bus.
1920	Wee McGregor	July 1	175.83 bus.

In dates of seeding potatoes during the past three years somewhat surprising results have been obtained. This applies especially to the year 1919, when the early part of the growing season was very dry, causing very poor growth and at the same time forcing the early seeded potatoes towards maturity. As a result of this somewhat advanced state in maturity the early seeded plots failed to make very much if any growth after the rains came in the later part of the season, whereas, the later seeded plots were in the right stage to make rapid growth when the moisture arrived. This gave very heavy yields in the later seeded plots and only fair returns from the early planted tubers.

POTATO YIELDS—FOUR-YEAR AVERAGE

<i>Variety</i>	1917	1918	1919	1920	Average
Bovee	226.1	154.62	531.25	157.66	267.41
American Wonder	347.5	313.30	572.50	138.29	347.40
Table Talk	314.3	253.75	552.50	156.30	319.21
Ash Leaf Kidney	311.7	282.6	538.33	132.00	316.16
Burbank	343.6	232.6	478.75	150.00	301.24
Lady Llewellyn	217.00	247.43	427.50	143.70	270.16
Irish Cobbler	256.4	172.46	536.66	127.93	273.36
Duke of York	143.5	262.5	517.50	146.95	267.59
Gold Coin	367	193.26	458.00	129.28	286.88
Rochester Rose	224.2	203.33	481.25	162.61	267.85
Everybody's Favorite .....	...	204.10	269.17	133.33	202.20
Money Maker	358.	321.66	479.17	132.43	322.81
Sir Walter Raleigh	245.0	279.86	478.50	150.45	288.45
Vix Extra Early	283.2	252.43	477.50	154.50	291.91
Sutton's Satisfaction	234.7	238.33	533.75	126.13	283.22
Early Daisy .....	...	342.5	438.75	128.38	303.21
Green Mountain	251.3	227.8	519.17	153.60	395.47
Early Ohio	169.9	197.85	376.25	109.46	213.36
Eureka	262.2	221.63	617.50	150.00	312.84
Purple .....	...	237.5	518.75	128.83	295.03
Early Midlothian .....	...	175.00	430.00	138.74	247.91
Sixty Day	132.00	219.10	360.00	120.72	267.95
Up to Date .....	...	215.00	425.00	160.32	266.77
Wee McGregor	313.90	379.36	452.50	132.94	319.70
Epicure .....	...	...	...	176.30	*176.30
Gold Nugget .....	...	...	...	177.07	*177.07
Mammoth .....	...	...	...	153.70	*153.70
Carmon No. 1 .....	...	...	...	179.86	*179.86
Cartar's Early Favorite .....	...	...	...	159.26	*159.26
Duchess of Norfolk .....	...	...	...	154.17	*154.17
Six Weeks Excelsior .....	...	...	...	...	...
(Fosters) .....	...	...	...	100.00	*100.00

Yields given in bushels in every case.

*One year test.

RATES OF PLANTING

<i>Distance between Sets</i>	<i>Distance between Rows</i>	1919	1920	Average
6 inches	3 feet	361 bus.	214.5 bus.	287.7 bus.
12 inches	3 feet	430 bus.	211.6 bus.	320.8 bus.
18 inches	3 feet	328 bus.	185.8 bus.	256.9 bus.
24 inches	3 feet	418 bus.	179.3 bus.	298.6 bus.
12 inches	18 inches	301 bus.	242.29 bus.	271.6 bus.
12 inches	24 inches	372 bus.	195.05 bus.	283.5 bus.
12 inches	30 inches	319 bus.	244.23 bus.	281.6 bus.
12 inches	36 inches	227 bus.	218.06 bus.	222.5 bus.
12 inches	42 inches	289 bus.	222.91 bus.	255.9 bus.

DEPTHS OF PLANTING

<i>Depth of Planting</i>	1918	1919	1920	<i>Average</i>
2 inches	341 bus.	223.4 bus.	151.6 bus.	238.6 bus.
3 inches		227.0 bus.	170.62 bus.	198.8 bus.
4 inches	351 bus.	248.8 bus.	177.7 bus.	259.1 bus.
5 inches		272.1 bus.	155.5 bus.	231.8 bus.
6 inches	322.5 bus.	296.0 bus.	144.4 bus.	254.3 bus.
7 inches		293.0 bus.	131.7 bus.	212.3 bus.

SIZE OF SETS

<i>Size of Sets</i>	1917	1918	1919	1920	<i>Average</i>
Whole Large	245.3	335	455	176.98	303.07
Whole Medium	251.3	305	414	157.14	281.86
Whole Small	251.3	260.1	364	138.88	253.57
Large 2 eyes			404	138.1	271.05
Medium 1 eye	275.5	255	390	108	257.12
Medium 2 eyes	267	400	391	126.19	296.04
Medium 3 eyes	399	168.25	246.7	397.5	302.86
Numerous eyes	402	179.36	258.3	276.5	276.79
Seed end	354	282.5		127.77	254.75
Stem end		262.5		156.35	209.42
Cut lengthwise			417	139.68	278.34
Cut crosswise			366	134.92	250.46
Cut diagonally			190	156.35	173.17

Numbers denote amount of bushels.

RESULTS OF SCAB TREATMENT

Variety	Treatment	Date Sown		Date Up		Results	
		1919	1920	1919	1920	1919	1920
Green Mountain	No treatment	May 20	June 3	June 17	June 27	Scabby	Rather badly scabbed.
Green Mountain	1/1000 Hg Cl ₂	May 20	June 3	June 17	June 27	Little scab, not deep.	Very badly scabbed.
Green Mountain	1/1500 Hg Cl ₂	May 20	June 3	June 17	June 27	Scabby.	Fairly free from scab.
Green Mountain	1/2000 Hg Cl ₂	May 20	June 3	June 17	June 27	Scabby.	Very badly scabbed.
Green Mountain	No treatment	May 20	June 3	June 17	June 27	Little scabby.	Fairly free from scab.
Green Mountain	1-10 formalin	May 20	June 3	June 17	June 27	Badly scabbed.	Fairly free from scab.
Green Mountain	1-20 formalin	May 20	June 3	June 17	June 27	Badly scabbed.	Badly scabbed, a few clean.
Green Mountain	1-30 formalin	May 20	June 3	June 17	June 27	Badly scabbed.	Fairly free from scab.

Frequently where the seed is not treated with various kinds of fungicides. This no doubt is due to the presence of the parasite mould in the soil. Just how to overcome the injury and loss from scab is a problem that is yet to be controlled.

The efforts with scab control have been very disappointing at this station. Potatoes grow with no more scab in evidence than in potatoes from seed treated with various kinds of fungicides. This no doubt is due to the presence of the parasite mould in the soil. Just how to overcome the injury and loss from scab is a problem that is yet to be controlled.

DAILY GROWTH OF SOME FIELD CROPS IN 1920

<i>Plant</i>	<i>Kind of Crop</i>	<i>Height July 21st</i> (inches)	<i>Height July 28th</i> (inches)	<i>Growth 1st 7 days</i> (inches)	<i>Average daily growth 1st 7 days</i> (inches)	<i>Height on Aug. 4</i> (inches)	<i>Height on Aug. 12</i> (inches)	<i>Growth for 8 days</i> (inches)	<i>Average daily growth for last period</i> (inches)
1	Oats	19.5	26.5	7	1	32	37.55	5.25	.65
4	Oats	15	21	6	.85	26	28.5	2.50	.31
2	Corn	26.25	34.5	8.25	1.17	43	51	10	1.25
6	Corn	27	36.25	9.25	1.32	46	55.5	9.5	1.19
2	Sunflowers (on sod)	24.75	36	11.25	1.60	44.25	50.25	6	.75
4	Sunflowers (on sod)	23.25	35	11.75	1.68	45	50.75	5.75	.72
3	Sunflowers (after oats broadcast)	21.50	37	15.50	2.21	51.50	52.50	1	.14
4	Sunflowers (after potatoes broadcast)	23.50	39	15.50	2.21	61.25	62.25	1	.14

The greatest growth made by an oat plant in 24 hours was one and one half inches on July 28th.
 The greatest growth made by a corn plant in 24 hours was two inches, on July 23rd.
 The greatest growth made by a sunflower plant in 24 hours was three inches on July 17th.

GARDEN TRUCK AND FRUITS

The small fruits plantation which was started four years ago is developing very well. In this plantation there are varieties of strawberries, raspberries, currants, gooseberries, and some of the more hardy tree fruits. The bushes and trees are making very fair growth. To date there has been very little injury from winter killing. In the course of a year or two these fruits should begin to bear.

The ordinary vegetables have been grown every year with marked success. The vegetables such as tomatoes, celery, asparagus, brussel sprouts, and vine fruits, that are not commonly known, have also produced very good returns. The accompanying illustration will give some idea of the kinds and quality of vine fruits and tomatoes produced last year. Yields of the leading varieties of vegetables under test will be given in next year's report.

The trees and shrubs of practically all varieties are growing very well. Very few of these have killed back during the winters and all have withstood the past three dry summers.

The flowers under test include both annual and perennial varieties. They have all given very good results. The accompanying photograph gives a view of a bed of asters as it appeared in 1920. Some of the most successful varieties of flowers at this point are as follows:

Annuals:—Asters, Stock, Verbina, Sweet Peas, Marigold, Sweet Alyssum, Candy Tuft, Jacoba, Nasturtiums, Lobelia, Calliopsis, Phlox, Sweet Sultan, Snapdragon, Infant's Breath.

Tubers:—Dahlias, Gladiolas, Begonias, Tulips, Tiger Lillies.

Perennials:—Carnation, Pink, Sweet William, Larkspur, Golden Glow, Fox Glove, Canterbury Bell.

Climbing Vines:—Hops, Virginia Creeper, Native Clematis, Morning Glory, Scarlet Runner, Cucumber and Climbing Nasturtium.

POULTRY COURSE, OCTOBER—MARCH, 1920—1921.

The lecture and practical poultry work undertaken during the past session have been of a more extensive nature than in former years.

A small flock of sixty birds which included the five principal utility breeds, namely, Barred Rocks, White Wyandottes, Rhode Island Reds, Buff Orpingtons and White Leghorns, was procured in November 1920. The feeding and general management of these birds has been undertaken by the students.

One of the features of the course has been the crate fattening of chickens, the feeding, killing and preparation for market was carried out by both men and women.

An incubator is at present running, with a view to giving second year students practical knowledge of the hatching and raising of chickens by artificial methods.

Steps are being taken to establish a Poultry Plant at the school commencing with 500 head of poultry. The object to teach men and women by practical experience, the importance of poultry keeping on the farm and also to make it possible for farmers in the district to procure pure bred egg record birds for stock purposes, day old chickens or eggs for hatching. Advice as to the care and management of poultry will always be obtainable.

DATES OF FIRST SEEDING AT OLDS, 1914—1920.

<i>Years</i>	<i>Dates</i>
1914	April 17th.
1915	April 3rd.
1916	"
1917	May 5th approximately.
1918	April 12th.
1919	April 8th.
1920	May 15th.

*No record.

EXPERIMENTAL TECHNIQUE

The work at the Olds Station is done with plots of one-hundreth and one-fiftieth acre in size. The tests are all run in duplicate and there are check plots at different places in the fields. The seed is sown with grain drill and the grain is cut with a binder. The bulk threshing is done with a small separator, while the small plots, peas, etc., are threshed with a flail.

F. S. GRIDALE,

Principal.

REPORT OF THE RAYMOND SCHOOL OF AGRICULTURE

SIR.—I beg to submit herewith the first annual report of the Raymond Provincial School of Agriculture for the year ending December 31st, 1920.

As the result of a demand for greater agricultural educational facilities, the Government of Alberta established one of the three recently constructed Schools of Agriculture at the town of Raymond. Construction work began during the summer of 1919 and the buildings were completed the following summer.

The Town of Raymond is situated on section seventeen, in township six, range twenty, west of the fourth meridian. It is twenty miles south east from the City of Lethbridge, on the Lethbridge-Cardston branch of the Canadian Pacific Railway.

The Raymond School of Agriculture is placed in the centre of what will undoubtedly be one of the largest irrigated districts in Canada. While irrigation projects in Canada are still in their infancy, and many of the farmers intend to irrigate the land who have had no previous experience in irrigation, it is quite fitting that a school of this character should be established where instruction along these particular lines might be given.

On April the first the writer was appointed to the principalship of the Raymond School of Agriculture. In addition to his duties in connection with the school he was asked to manage the Demonstration Farm, which is operated in conjunction with the Agricultural School, until such time as a permanent manager could be appointed. On the first of August Mr. E. G. Minielly, B. S. A., was appointed as assistant and later received the appointment of Farm Manager and Live Stock Instructor.

THE SCHOOL

At present the school plant consists of two buildings, namely: the Main building and the Farm Mechanics Building. These buildings are situated on the Demonstration Farm which adjoins the town of Raymond on the east, and the Canadian Pacific Railway right of way on the south.

The school is admirably situated at the end of one of the main streets of Raymond. This structure is a three-story steel building 60 by 105 feet in size. The exterior is finished with red pressed brick and stucco in a very pleasing and attractive manner.

Splendid accommodation is provided in the main building for the teaching of agriculture and domestic science to the boys and girls respectively. This building consists of a number of lecture rooms and laboratories, besides offices, store rooms, etc. In these rooms special accommodation and equipment is provided for the teaching of agronomy, mechanical drawing, dairying (including butter making and cheese making), agricultural chemistry, agricultural physics, and allied subjects. In addition to the class rooms and laboratories a large and brilliantly lighted auditorium is provided where public meetings and entertainments are held.

Students taking the domestic science course are likewise provided with commodious class rooms particularly adapted and equipped for giving instruction in laundry, cooking, sewing, home nursing, household administration, home dairying and poultry.

Seventy-five feet to the rear of the school is located the Farm Mechanics building. This one-story building is 40 by 120 ft., and is similar in design and construction to the school. Within the mechanics building room is provided for the steam heating plant, the blacksmith and carpentry shop, where the students receive instruction in blacksmithing, horseshoeing, gas engineering, carpentry, building construction and other instruction of a practical nature. Stock judging classes were also held in this room during the past term.

The blacksmith shop is equipped with forges, anvils, drills, vises, and other blacksmithing tools, and the carpentry shop is equipped with eighteen carpentry benches, and a corresponding number of sets of tools. Various types and makes of gas engines have been loaned to the school for demonstration purposes by dealers and manufacturers.

Many courses are offered to the students attending the Agricultural School but none have proved more attractive than the mechanics course. This work the students always follow with keen and unabated interest.

Arrangements have been made with the Ellison Milling Co. of Raymond and the town of Raymond to supply the school with electricity and water. Very satisfactory service has been rendered by both parties. A Terril gas machine supplies gas to the laboratories and to the individual stoves in the domestic science kitchen. This gas is produced from high grade gasoline. The buildings throughout are well heated, lighted and ventilated, and liberally supplied with hot and cold water.

THE DEMONSTRATION FARM

The Demonstration Farm upon which the school is situated consists of 290 acres of irrigable land. The entire area is under cultivation, with the exception of about thirty acres. During the past summer a residence 30 by 32 feet in size and a cattle barn 40 ft. wide by 86 ft. long were erected, also an implement shed 20 ft. by 60 ft. in size. These buildings are substantially built and are modern in every respect.

The live stock that have been placed on the farm are all pure bred animals and are excellent types of their respective breeds. They consist of the following: Percheron horses; Aberdeen Angus cattle; Ayrshire heifers; Oxford sheep; and Berkshire hogs.

SUMMER'S WORK

During the summer months general farm operations were supervised, also the construction of the buildings which were being erected on the farm. In addition to the aforementioned work, the entire territory served by the Raymond Agricultural School was canvassed for students. From time to time public meetings were addressed in the interests of the Raymond School of Agriculture, and the Department of Agriculture.

Four school fairs and three agricultural fairs were held in the Raymond Agricultural School district. The former were held under the supervision of the Claresholm School of Agriculture and the latter under the Fairs and Institutes Branch of the Department of Agriculture. These fairs were attended and various classes of exhibits were judged and other assistance rendered. These fairs were found to be an excellent means of giving publicity to the Agricultural Schools, and promoting an interest in agricultural education.

While canvassing the territory for students it was found that the financial condition of the farmer was a determining factor when approached regarding sending his boys and girls to the Agricultural School.

The south and easterly part of the district served by the Raymond Agricultural School suffered severely from drouth and in certain areas from soil drifting. In the northwest portion of the district severe loss was experienced due to soil drifting. As the result of these unfavorable crop conditions we have no representatives from these districts in our student body.

The season throughout the southern portion of the province was somewhat abnormal. Following the severe winter of 1919-20 an early spring was anxiously hoped for. Unfortunately for most farmers this hope did not materialize. During the month of April and the early part of May the precipitation in the form of snow and rain was abnormally heavy, reaching the unprecedented amount of nearly five inches of rainfall.

Following the heavy rainfall a drouth period set in lasting from about the middle of May until the fifth of July. From the fifth of July until the twenty-fifth nearly three inches of rain was received which came just in time to save the parched crop from ruin. These rains were more or less local and as already indicated large areas were not visited by these rains and partial or total crop failure resulted.

The precipitation registered at Raymond was as follows:

April	4.78 in.	May	1.32 in.	June .....	.40 in.
July	2.77 in.	August .....	.30 in.	September .....	.12 in.
October .....	.84 in.	November .....	.45 in.	December .....	.65 in.

Evaporation from a free water surface from June 15th to Nov. 1st. amounted to 27.77 inches.

No experimental work was undertaken during the past summer, as it was found necessary to clean the land before commencing this work. It is the intention to develop this work to a considerable extent during the coming year.

During the month of October the members of the staff took up their duties at the school. The following are the names of the members of the staff and the departments for which they are responsible.

O. S. Longman, B. S. A., Principal and Agronomist.
 E. G. Minielly, B. S. A., Farm Manager and Livestock Instructor.
 W. S. Benn, Instructor in English and Mathematics.
 W. A. De Long, B. S. A., Instructor in Science.
 Terrance H. Ashby, Assistant Agronomist.
 J. E. Davis, V. S., Instructor in Veterinary Science.
 A. N. McDonald, Instructor in Dairying.
 E. J. Mehew, Instructor in Blacksmithing.
 B. J. Rolfson, Instructor in Mechanical Drawing.
 Miss W. A. Suttaby, Instructor in Household Science.
 Miss J. De Guerre, Instructor in Household Science.
 Miss A. L. Fennell, Instructor in Home Nursing.
 Miss Nora Swain, Stenographer.

It gives me great pleasure to state that a splendid spirit of co-operation and an earnest attitude towards the work has been exhibited by all members of the staff.

ENROLMENT

Students were admitted to the Raymond Agricultural School on Oct. 29th, 1920. The student enrolment at the school has been most gratifying. The total number enrolled consists of 68 boys and 34 girls making a total of 102 students. This is the largest initial enrolment at any of the Provincial Schools of Agriculture. Of the 68 boys enrolled two have taken the first year at Claresholm and are

completing their second year at the Raymond School. There are also seven boys with junior matriculation standing who are taking the two years' course in one.

The average age of the boys is 19 years and twenty per cent. have taken the Grade X. work in high school. There are no girls taking the second year course in domestic science. The average age of the girls taking the first year course is 17 years and twelve per cent. of them have taken Grade X. work in high school. As one would naturally expect, a large percentage of the students are from the town of Raymond and its immediate vicinity.

OFFICIAL OPENING

The course of studies given is the same as outlined in the school calendar published by the Provincial Board of Agricultural Education, with the exception that greater emphasis has been placed upon the study of irrigation.

The official opening of the Agricultural School took place on Jan. 15th, 1921. During the afternoon of that day the school was open to public inspection while each department was in operation. A large number of the citizens from Raymond and the surrounding country visited the school. Many favorable and encouraging comments were made regarding the school and the work that was being done.

In the evening a banquet was given in honor of the members of the Provincial Government and others. The guests of honor were: Premier Stewart, Hon. Duncan Marshall, Hon. A. J. McLean, Dr. H. M. Tory, of Alberta University, Mr. A. E. Meyer, LL.B., Superintendent of Agricultural Schools, Martin Woolf, M. L. A., and Mr. Ray Knight.

Great credit is due the ladies of Raymond and members of the staff for the elegant banquet served. The school orchestra provided the music for the banquet which was highly appreciated by all present. After the banquet a meeting was held in the Raymond opera house where a large audience listened attentively to a number of interesting and profitable addresses. The speakers of the evening were Premier Stewart, Hon. Duncan Marshall, Hon. A. J. McLean, Dr. H. M. Tory, Mr. A. E. Meyer, Martin Woolf, Mr. Ray Knight, and President H. S. Allen.

Mayor De Voe Woolf of Raymond presided at both the banquet and the public meeting in a very acceptable manner.

In concluding this report, Sir, and with your permission I would like to make the following recommendation in the interests of our school and students. First, that a pavilion be constructed for the judging of livestock, and that this building be so constructed as to be suitable for the practising of indoor athletics. Second, that accommodation for a larger class of domestic science students be provided in the domestic science department of the school. Third, that extra accommodation be provided for the teaching of science in order that our present science equipment may be used to greater advantage.

All of which I respectfully submit,

Your obedient servant,

O. S. LONGMAN,

Principal.

REPORT OF VERMILION SCHOOL OF AGRICULTURE

Mr. A. E. Meyer,
Supt. Schools of Agriculture,
Edmonton, Alberta.

SIR,—I beg to submit herewith the annual report of the School of Agriculture, Vermilion, for the year 1920.

As indicated in previous reports our work may be divided into three parts, namely, investigation, teaching and extension. I shall deal with these phases of our work in the order given above.

Investigational work logically precedes teaching; knowledge must be acquired before it can be taught. We have therefore devoted all possible effort, within the limitations of our equipment and finances, to investigational work.

A knowledge of soils and crops is of fundamental importance to the farmer. More than sixty-five per cent. of the revenue of the farmers of Alberta comes from the sale of crops, and even the revenue from live stock is largely an indirect result of crop production. For these reasons our experimental work has dealt largely with soils and crops.

Our experimental work on soils has dealt with soil fertility, soil moisture, and soil management. Under soil fertility our chief studies have been with farm manure, fertilizers, green manures, and crop rotation. Soil moisture studies have been conducted with a view to finding which practices tend to conserve and which to waste, soil moisture. Records of rain, sunshine and evaporation have been kept with the idea of co-ordinating these factors with soil cultivation and crop production. In soil management studies have been carried on by comparing the effect of various farm implements, and different methods of soil cultivation.

In crop studies we have compared a large number of varieties of all standard farm crops. New varieties have been brought into our work as they became available. In addition to variety tests with the cereals we have compared our fifteen varieties of grasses and many other fodder crops such as millet, corn, sorghum, rape, sweet clover, alfalfa and a large number of mixtures of the common grain crops cut for fodder. During the year we began an investigation of the proper rate, and width between rows, to seed sunflowers.

Twenty-one different crop rotations are now laid down. These are being conducted, to learn, not only the effect of crop sequence on soil fertility, but also to get some information as to which rotation should prove most profitable for farmers of the district to follow.

Space does not permit giving results of these various experiments in this report but to any interested person we will be glad to give information on request. The results of our work are used to good effect in teaching our students.

TEACHING WORK

As reported last year we had during the 1919-20 school term a class of returned soldiers who took a three months course with the intention of qualifying for loans under the Soldiers' Settlement Act. This course ended on Feb. 18th, 1920. A full account of the subject matter of this course together with the names of the students appeared in last year's report.

Beginning on March 1st, and continuing for two weeks we held a short course, the subjects of which were: gas engines, tractors, soil cultivation, cereal crops, forage crops, live stock judging and feeding, poultry and dairying. This short course was attended by thirty men of the district.

On October 29th, our school was opened to regular students after having been closed to them for two years. As was expected our second year attendance was not large, and it seems that in general the school has got out of touch with its prospective students, for our total enrolment is now just 35. However with a good percentage of our present first year returning for second year work and a larger first year attendance should be back to normal next year. A list of the names of the students enrolled for the 1920-21 term is given at the end of this report. Our students are now making good progress in the regular course as laid down by the school calendar.

EXTENSION WORK

Our chief extension work has been in organizing and conducting school fairs. These fairs were conducted on the same plan as in former years but on a somewhat more extended scale. The accompanying table gives an adequate idea of the extent of the school fair work.

MEETINGS

During the year members of our staff attended twelve farmers' meetings and gave addresses on agricultural subjects.

CORRESPONDENCE

More than fifteen hundred letters were sent out, many of which were in reply to requests for information. It is worthy of note that we received over twenty-five letters from intending settlers from the United States and Great Britain asking for information about the rainfall, crops, temperatures, and other features related to farming.

GERMINATION TESTS

Between Nov. 1st, 1919, and April 1st, 1920, we tested nearly 1400 samples of grain for germination. These samples were sent to us by farmers from all over Northern Alberta. During the latter part of 1920 we have received only about 30 samples. This indicates that in general the farmers consider their seed satisfactory this year, at least in so far as germinating power is concerned.

WEATHER RECORDS

As usual we have recorded weather data for every day in the year. Some noteworthy features of these records are, the total snowfall of 46 inches, the late date at which seeding began, May 10th, the heavy rainfall in June, 6¾ inches. The extremes of temperatures were not as great as have been recorded in previous years but the duration of the winter was the longest we have recorded.

The following are the names of our staff with the subjects taught by each:

<i>Centre</i>	<i>Secretary</i>	<i>Address</i>	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>No. of Exhibits</i>
Waterhole	E. R. Parker	Bluesky ..	12	81	79	975
Grand Prairie	M. B. McCall	Gr. Prairie	15	110	110	1,200
Stony Plain	Miss E. Church	St. Plain ..	19	174	197	2,100
St. Albert	A. W. Foley	Edmonton .	9	76	76	900
Sunnyside	A. W. Foley	Edmonton .	17	140	151	1,750
Clover Bar	A. W. Foley	Edmonton .	14	92	100	1,150
Smoky Lake	A. W. Foley	Edmonton .	5	68	61	775
Ft. Saskatchewan ..	L. B. Yule	Ft. Sask...	18	157	153	1,900
Strome	J. N. McNeill	Strome ..	13	107	94	1,200
Killam	H. W. Scott	Sedgewick ..	11	113	120	1,400
Lougheed	H. W. Scott	Sedgewick ..	17	112	107	1,350
Hardisty	Walter Scott	Hardisty ..	12	101	103	1,225
Amisk	O. G. Brooks	Amisk	10	87	71	950
Czar	Ewing Smith	Czar	16	128	116	1,500
Provost	Miss F. Tiffin	Provost ..	12	85	94	1,075
Battle Bend	H. W. Scott	Sedgewick ..	3	21	21	300
Alliance	Mrs. H. Fleming	Alliance ..	10	97	89	1,100
Edgerton	Mr. R. Hulland	Edgerton ..	13	110	118	1,200
Kinsella	F. R. Surrey	Kinsella ..	15	94	93	1,125
Viking	H. Porter	Viking	13	83	85	1,000
Ryley	A. D. McPherson	Ryley	11	80	85	500
Vegreville	J. C. Butchart	Vegreville ..	20	152	125	1,650
St. Paul	X. P. Crispo	St. Paul ..	20	90	90	1,050
Innisfree	C. O'Daly	Innisfree ..	7	64	47	650
Minburn	Mrs. M. L. Stewart	Minburn ..	9	81	90	1,000
Manville	W. P. Wagner	Manville ..	14	118	119	1,100
Myrnam	T. H. Halloran	Myrnam ..	12	124	111	1,050
Vermilion	J. J. Laughlin	Vermilion ..	27	152	162	1,800
Islay	Mrs. E. Maire	Islay	10	90	76	800
Kitseoty	T. H. Currie	Kitseoty ..	12	81	54	850
Winona	Mrs. V. G. Clay	Paradise Vy.	10	57	37	900
Total ..			406	3,125	3,034	35,525

J. G. Taggart, B. S. A., Principal and Instructor in Agronomy.

J. J. Loughlin, Instructor in Mathematics and English.

A. Blackstock, B. S. A., Instructor in Animal Husbandry.

N. C. Qua, M. A., Instructor in Science.

G. W. Scott, Instructor in Dairying.

W. J. Moon, V. S., Instructor in Veterinary Science.

HOME ECONOMICS

Miss A. P. Scott, Instructor in Cooking.

Miss H. M. Gowsell, Instructor in Sewing.

Miss H. B. Acton, Instructor in Home Nursing.

The names of students who are now enrolled are as follows:

1ST YEAR BOYS

Allen, Clifton	Westlock
Archibold, John	Provost
Booher, Fred	Manville
Bazley, Thomas	Edmonton
Cairns, Jack	Islay
Davidson, A. E.	Strome
Eyben, Herman	Cummings
Ewing, Clarence	Manville
Farquharson, W.	Provost
Harrison, R. M.	Battleview
Haney, Mark	Talbot
Jennings, John	Vegreville
Kneen, Harry M.	Edmonton
McCue, Arthur	Bon Accord
Rice, Gladden	Edmonton
Shemanchuk, Alex	Edmonton
Symes, George	Battleview
Van Wassenhove, Marcel	Edmonton
Winters, Hubert	Vermilion

2ND YEAR BOYS

Brown, F. E.	Streamstown
Black, James	Hope Valley
Young, Otto	Wealthy

1ST YEAR GIRLS

Bury, Ruth	Vermilion
Cairns, Mary	Islay
Eyben, Mary	Cummings
Fowler, Dorothy	Innisfree
Irving, Agnes	Cummings
Milligan, Marjorie	Bon Accord
McKay, Helen	Vermilion
Shoki, Hilda	Kinsella
Shoki, Gudrun	Kinsella
Taggart, Alma	Vermilion
Varvin, Millie	Springwater Sask.
Winters, Maud	Manville

2ND YEAR GIRLS

Christopherson, C. J.	Weldren, Sask.
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Respectfully submitted,

J. G. TAGGART,

Principal.

REPORT OF THE YOUNGSTOWN SCHOOL OF AGRICULTURE

The first term of the School of Agriculture at Youngstown commenced on October 29th this year. This school is one of the three new ones starting operations this year and is one of the six now operating in Alberta. Construction work on the building which was begun in 1919, was delayed by the severe winter weather of early October but was recommenced early in March 1920 and carried on as rapidly as possible. Much difficulty was experienced by the contractors in getting building material so that the building was just completed and ready by the opening of the regular school term. The new building was built after a very different plan than that from which the original schools were and is a decided improvement in many ways. The Department of Agriculture was fortunate in securing for its Demonstration Farm land adjoining the town, on which the new school is located—a site by no means inferior to that of any of the other schools of the province. The building is thoroughly modern in every respect and splendidly finished and equipped throughout.

THE STAFF

As stated above the first term opened on October 29th. The following men and women constitute the staff:

- R. M. Scott, B. A., Principal and Instructor* in English and Mathematics.
 N. S. Anderson, B. S. A., Farm Manager and Instructor in Animal Husbandry.
 B. J. Whitbread, B. S. A., Instructor in Agronomy.
 J. C. McBeath, B. S. A., Instructor in Science.
 T. C. Talbot, Instructor in Mechanics.
 Miss M. N. Scott, Instructor in Home Economics.
 Miss H. B. Acton, R. N., Instructor in Home Nursing.
 Dr. W. J. Moon, V. S., Instructor in Veterinary Science.
 W. J. Beckett, Instructor in Dairying.

EXTENSION WORK

School Fairs:

On account of the fact that operations were just commencing at Youngstown, no school fair work was undertaken by the school in the spring. This work was done by the school at Olds as in preceding years. Seeds were distributed and organization work carried on from there for nine school fair centres in the Youngstown district, namely, Youngstown, Chinook, Oyen, Acadia Valley, Fairacres, Monitor, Consort, Coronation and Castor. Later in the season arrangements were made whereby the Youngstown school took over the management of these fair centres entirely with the exception of the last named, Castor, which is an exceptionally large centre and requiring co-operation with Olds in the matter of judging the exhibits. Judges from the Youngstown School of Agriculture attended and did the judging at each of the other centres named. Whenever possible short talks were given to the boys and girls after the judging, on topics relating to school fair ideals, proper selection of exhibits, etc. The exhibits of vegetables and grains, sewing and cooking in every case were very creditable. Only in the livestock exhibits could any fault be found, the number of entries in

some cases being small. It is confidently expected that this matter will receive more attention from the boys and girls next year.. Considering the character of the season, the very late spring, the extreme dry weather, with the fact that five were new centres, there is no doubt but that the interest in these fairs will be greatly increased. Plans are laid for the extension of this work during the coming year. The work will be carried on from the Youngstown school.

An address on "School Fairs" was given at the convention of the teachers of the Hanna and Chinook Inspectorates held in Hanna in October. A general outline of the work including some of the aims of the school fair work as well as the organization of and financing of school fairs were discussed for the benefit of those new to the work.

The following are the fair centres, their dates and the names of the secretaries:

Acadia Valley	September 10	Mrs. K. G. Dalgleish
Chinook	September 23	Mr. E. Mitchell
Coronation	September 15	Mr. H. B. Doughty
Consort	September 16	Mr. Wellesley Fraser
Monitor	September 17	Mr. H. A. Warner
Fairacres	September 21	Mrs. F. M. Ihde
Oyen	September 22	Mrs. C. G. Wright
Youngstown	September 24	Miss M. E. Murray
Castor	September 14	Mrs. Alex Reid

Grasshopper Work:

Grasshoppers caused considerable worry among farmers this year in the Drumheller, Munson and Mecheche districts, owing to the fact that little was known of how to combat them. A representative from the school visited these districts at different times to estimate the probability of, or amount, of damage. Surveys were made, bulletins were distributed and newspaper notices given out with information as to how to poison grasshoppers and where to secure poison for that purpose. No material damage was discovered or reported except in one instance near Drumheller, where a twenty-five acre field of late wheat was partially destroyed. The hoppers, however, were quite numerous in all sections visited and the probabilities are that with a season favorable for them next year much more damage may occur.

Institute Meetings:

Besides school fair work and grasshopper control several addresses were given at Institute meetings. Staff members gave addresses at meetings held in Youngstown, Delia, Chinook and Oyen on various topics of direct interest to farmers from social and economic standpoints.

ENROLMENT

A total of forty students was enrolled this term in Agriculture and Home Economics, all of whom are first year students. Their ages vary from sixteen to twenty-five with an average of seventeen years. Their previous education ranges from Grade V, in public school to Grade XI, of high school. Every student in agriculture comes to us direct from the farm home. We have students who were born in Manitoba,

Ontario, British Columbia, England, Illinois, North Dakota, South Dakota, Idaho, New York, Michigan, Minnesota, Massachusetts, Bulgaria, Russia, Austria and Alberta.

Their names and addresses are as follows.

Anderson, Hildur	Youngstown
Bulovitzky, Alice	Rowley
Gray, Alma	Hayter
Hough, Gertrude	Stonelaw
Mellom, Algo	Youngstown
Mabbott, Grace	Youngstown
McBean, Ida	Cereal
Metcalf, Helen	Youngstown
Stilling, Katharine	Youngstown
Toban, Olive	Youngstown
Baker, Albert	Sibbald
Bishop, Horace	Excel
Bower, Charles	Loyalist
Bulovitzky, William	Rowley
Bulovitzky, Sam	Rowley
Briedzki, John	Youngstown
Cline, Hugh	Loyalist
Dafoe, Cecil	Zetland
Dahl, Clifford	Sedalia
Green, Richard	Youngstown
Fauver, Lee	Youngstown
Harris, Glen	Earlstone
Hakl, George	Youngstown
Kern, Emil	Youngstown
Long, Joseph	Cereal
Lyster, Ian	Youngstown
Mabbott, Verne	Youngstown
Mabbott, Elmer	Youngstown
McBean, Peter	Cereal
McBean, Charles	Cereal
McBean, Fred	Cereal
Shuler, Leroy	Sibbald
Reiner, Walter	Youngstown
Stewart, Charles	Stannore
Wilms, Anton	Earlstone
Wilms, Walter	Earlstone
Wilson, Irving	Sedalia
Wardell, Ted	Lanfine
Worthing, George	Campbell Hill
Worthing, Ernest	Campbell Hill

REPORT OF THE PROVINCIAL DEMONSTRATION FARMS

SIR.—I have the honor to submit herewith the annual report of the Provincial Demonstration Farms.

CROPS

The crop on the Demonstration Farms for the past season has been an average one, with the exception of the Olds, Claresholm, and Gleichen farms, where the oats and barley crops were particularly good although the season was late in opening up. With the absence of frost in the ground, as the snow melted away it was absorbed by the soil which added the needed moisture to promote growth. Owing to the early winter most of the land had to be plowed in the spring, making the season late, but with the continued fine weather and an occasional rain during the summer the grain and grasses made rapid growth. In the Youngstown district the grain made a good start germinating very rapidly with but a few showers during the seeding operation. Later on the dry hot winds of June and July evaporated the moisture, ripened the crops too quickly, making the yield of oats, wheat and barley very light for the acreage seeded. This land was summerfallowed the previous year. The hay crop at Sedgewick, Vermilion, Olds and Stony Plain was a very good crop, the varieties including timothy, brome and western rye grasses.

Alfalfa:—This crop has not been grown extensively on any of the farms previously, but we are adding to the acreage each year at several of the farms, especially at the Gleichen and Raymond farms, where until late this clover can be irrigated. Last season the water was not used at the Gleichen farm where an area of ten acres of alfalfa was grown, owing to some repairs to be made to the water supply. Without the water the first cutting averaged two tons per acre. With the added twenty acres seeded last year we hope to be able with the help of water this summer to increase the yield per acre. At the Claresholm farm where dry farming operations were carried on last year the alfalfa crop averaged one and one-quarter tons per acre. At two of the other farms, Sedgewick and Olds, a very small acreage was seeded, but it did not amount to anything and was plowed up. At the Raymond farm where twenty acres will be seeded this season under the ditch this crop will no doubt be grown successfully.

Sweet Clover:—I am sorry to report that this clover did not do so well on any of the farms during the past season. There was a small acreage seeded on several of the farms, but it did not germinate very well and with the dry hot winds of July the moisture evaporated leaving the young plants to die. We intend seeding a small acreage on several of the farms this year again and hope to have better results.

Fall Rye:—Fall rye has been used on all the farms for several years and has been a reliable crop. This crop sown during the latter

part of July and on properly prepared land will give good pasture for several weeks in the fall, but should not be pastured so close as to expose the roots to the winter weather. It can be grown successfully for threshed grain alone, and should be grown more extensively in the southern parts of the province as it would help to prevent soil drifting.

Sunflowers:—Last year was the first season that this crop was grown on any of the farms for ensilage purposes, and it did very well on all of the farms, with the exception of Clatesholm and Olds where the cutworms destroyed the young plants. This crop is harvested the same as corn. It is a great advantage to have a corn binder for cutting this crop, as the stocks grow to a height of six to twelve feet and cannot be harvested with the grain binder. At the Youngstown farm, although the dry hot winds of June and July caused the moisture to evaporate, this crop gave an average yield of ten tons per acre. At several of the other farms sunflowers gave a yield of from fifteen to twenty tons per acre. This crop when put in the silo alone is very soft, and to absorb the surplus juice, we added one load of green oats to two loads of sunflowers preventing the loss of the juice. I cannot say at the present time what the feeding values of this crop are, and it will be very hard to determine in a mixture.

The cultivating of this crop should be the same as corn, the ground properly prepared and manured if possible, and thoroughly mixed with the soil, planted in rows if the land is clean, but if very weedy sunflowers should be planted so they can be thoroughly cultivated to check the weeds and promote growth.

Turnip Crop:—During the past season, the turnip crop in several of the farms, especially Stony Plain and Sedgewick, gave a large yield, but in the southern part of the province the turnips did not do so well. With moisture this crop can be grown successfully anywhere in the province.

Rape:—Rape is one crop that can be depended on and has been grown successfully for a number of years on the farms. With a fair amount of moisture rape will give a good supply of green food for pigs, sheep and young cattle. It is not advisable to enclose animals on this pasture alone as they should have access to grass pastures besides. Rape should be planted in rows in preference to being sown broadcast, for when pasturing the animals do not waste so much, and the crop can be given cultivation to check the weeds.

Seed Grain:—In previous years we were unable to supply farmers with much seed grain, but this year we can supply quantities of good seed from the following varieties, marquis wheat, O. A. C. 21, barley, banner oats and fall rye to farmers desiring to purchase it at reasonable rates.

Corn:—The corn crop on the farms did very well where planted during the past season, viz., Sedgewick, Athabasca and Raymond. At the former place an area of eight acres was planted in corn which grew to a height of from six to eight feet, and gave an average of from twelve to fifteen tons per acre. At the Raymond farm corn did very well, it produced large ears almost to maturity when harvested. These are

the only farms where corn was grown last year as sunflowers were planted instead. We hope to have a small acreage on most of the farms to compare with sunflowers for ensilage.

LIVE STOCK

The following is an account of the herds of cattle, sheep, swine and horses on the demonstration farms throughout the province. As we have to keep both beef and dairy breeds of cattle it makes it more difficult to build up a good herd of each type. These are necessary for class-room purposes at each school.

Claresholm—Farm has the Herefords representing the beef type and Ayrshires representing the dairy type with Shropshire sheep and Berkshire pigs. We are also purchasing one span of pure bred Percheron mares for class-room and breeding purposes.

Vermilion—This farm is stocked with dual purpose Shorthorn cattle, Oxford sheep, Berkshire pigs and grade horses, with four pure-bred cows to represent the other dairy breed. Dual purpose Shorthorns are making rapid gains on the beef breeds. They make a good combination cow where larger quantities of milk can be obtained and where good beef steers can be raised. This breed of cattle is very profitable to the farmer.

Olds—Farm has chiefly Shorthorn cattle with a few Holsteins to represent the dairy breeds for class room purposes, Shropshire sheep, Berkshire pigs, with three pure-bred Clydesdale mares for breeding purposes.

Youngstown—This farm was equipped with surplus stock from the herd at Olds with Shorthorn cattle and Berkshire pigs. Shropshire sheep were taken from Stony Plain. We have also purchased one span of pure-bred Clydesdale fillies for class room and breeding purposes at the farm.

Raymond—The herd of pure-bred Aberdeen-Angus cattle at this farm was purchased a few months ago, including seven females and one male as nucleus of a herd of this breed. There are also three pure bred Percheron fillies. These will also be used for class-room and breeding purposes. There are Oxford sheep from surplus stock at Sedgewick and Berkshire pigs from Claresholm.

Gleichen—Gleichen farm is equipped with Hereford cattle from surplus stock from Claresholm, also two Jersey cows and four heifers transferred from Medicine Hat farm when this farm was closed up; Oxford sheep from surplus stock from Vermilion and Berkshire pigs from Olds, two pure-bred Clydesdale fillies for class-room and breeding purposes.

Sedgewick—Sedgewick farm though it has no school connected with it has also a good herd of Shorthorns, Oxford sheep and Duroc Jersey pigs. This farm has supplied surplus stock to equip the new farms.

Athabasca—Athabasca farm is equipped with Shorthorn cattle, Berkshire pigs and Oxford sheep.

Stony Plain—This farm is stocked with pure-bred Holstein cows for dairy purposes only, with Shropshire sheep and Duroc Jersey pigs. The following is a list of some of the records for the year 1920.

	<i>Days</i>	<i>Milk</i>	<i>Test</i>	<i>B. P.</i>
Vrouka Mercedes, 6 years	292	16,938.7	3.5	634.1
Queen Mercedes De Kol, 4 years	315	16,000.0	2.9	570.6
Aliene Mæchtilde Korndyke, 4 years	273	12,337.1	3.5	572.8
Camiele A. Korndyke	285	10,977.5	3.7	374.2
Julia K. Wayne	241	9,455.7	3.1	279.0

REPORT OF THE SUPERINTENDENT OF FAIRS AND INSTITUTES

SIR,—I herewith submit the report of the Superintendent of Fairs and Institutes for the year 1920.

EXHIBITIONS AND FAIRS

The season of 1920 was a most favorable one for fairs in respect of weather. Out of 104 fairs and exhibitions held in the months of July, August, September and the first week of October only about six fairs received a wet or disagreeable day, the other 98 being favored with the sunny skies and ideal weather conditions so characteristic of the province of Alberta. The number of fairs was the largest we have ever held and the interest and attendance were on the whole almost if not quite as good as usual.

The writer attended 30 fairs this season including all the principal ones, and while the report which I now make is generally speaking favorable there are a number of criticisms and suggestions I feel compelled to make with the view of attaining a higher standard and increased efficiency in years to come. Following the severe winter and unprecedented feed scarcity of 1919-1920, it was no surprise that the general condition of the live stock exhibited last fall should be below par and this was clearly the case everywhere. Since then conditions have materially changed, however, so that grain and fodder are now abundant and as far as the seller is concerned far too cheap. In volume the exhibits were hardly up to the previous years, the main reason given being the great difficulty in securing competent help on the farm and the extremely high rate of wages everywhere demanded. This difficulty will not likely occur at any rate to the same extent in 1921. Still another reason given for reduced exhibits is the enormous number of automobiles now owned in almost every section of the country. Formerly the farmer used to drive his family to the annual fair on a wagon or surrey leading or driving a number of cattle or horses for exhibition. Now in numerous instances he leaves the stock at home and drives the folks to the fair in his flivver or McLaughlin Six so they may all enjoy the outing and the opportunity to visit their friends, see the exhibits and incidentally invest their spare cash with one or other of the slippery smooth-tongued fakirs from California.

Side Shows:—These side shows or "snide" shows have been increasing from year to year and are now considered an important and seemingly an almost indispensable part of the Agricultural Fair. While some of them are comparatively harmless there are others that from no point of view can be classed as desirable or appropriate. They are conducted for the most part by professionals from a distance, and their sole object is not to entertain but to swindle. Many thousands of dollars are annually filched from Alberta citizens while attending the agricultural fairs, one operator having confessed to the writer that he had

won \$2,500 last season over and above his hotel and travelling expenses. It is surely time that the public realised the seriousness of the situation and refused absolutely to have any dealings with fakirs of all kinds on the fair ground.

Fairs in Harvest:—Although the various agricultural societies always endeavor to fix the most suitable date for their annual fair, it so happened that a much larger number than usual were held during harvest and threshing in 1920. The reason for this unfortunate circumstance was the fact that harvest came about two weeks ahead of the expected date and this of course could not be foreseen. A large proportion of the 1921 fairs will be held in the earlier part of August with the view of not conflicting with either haying, harvesting or threshing.

Good and Poor Fairs:—From the reports sent in by the judges, supplemented by my personal observation, I have selected 52 fairs as having been reasonably successful during the last year. 27 fairs were poor, unsatisfactory and unprofitable, and the remaining 25 might be characterised as being in the "in between" class, neither conspicuous failures on the one hand nor marked successes on the other hand. After making due allowance for harvesting operations, and wet days I consider the following fairs have all failed to come up to a reasonable standard of efficiency in 1920, the poorest being in the order named: Vulcan, Edson, Alix, Okotoks, Retlaw, Lomond, Irvine, Raymond, Irma, Wainwright, Holden, Bashaw, Westlock, Mosside, Oneway, Durlingville, Elk Point, Athabasca, Colinton, Nanton, Bassano and Langdon.

The most successful fairs were Lloydminster, Sedgewick, Stony Plain, Vermilion, Red Deer, Camrose, Stettler, Viking, Innisfail, Milner-ton, Castor, Didsbury, Brooks, Berry Creek, Daysland, Hartshorn, Taber, Winnifred, High River, Oyen, Delia, Munson, Killam, Trochu, Rowley, Macleod, Millarville, Bowden, Olds, Rocky Mountain House, Busby, Nakamun, Paddle River, Barrhead, Chauvin, Provost, Veteran and a few others.

At the recent annual convention of the Agricultural Fairs Association a strong sentiment was expressed in favor of a reduction in the number of fairs in Alberta; and those fairs that do not make good in the opinion of the judges and the Superintendent of Fairs and Institutes should be required to disorganise and have their charters cancelled.

It is understood however that each society now in existence be given one more trial which will determine their right to continue holding an annual exhibition.

Farmers' Institutes:—The usual Institutes were held by each agricultural society to qualify for the membership grant. In addition a good many meetings have been held at various outlying points not touched by the railways and especially in districts where foreigners predominate. A larger number of this class of Institute meetings have been held during the present winter than for many years and the information given by the staff from the Department appears to be highly appreciated and is certainly much needed.

Calf and Baby Beef Competitions:—These most interesting competitions were again held in connection with the Spring Stock Show at Edmonton and the Winter Fat Stock Show at Calgary. Both contests were carried out most successfully. The entries were large, the quality better than ever and the judges were fortunate in being able to satisfy practically everybody concerned. Where different and opposing breeds come into competition, it is a most difficult task for any judge, no matter how competent, or how disinterested, to give general satisfaction, but Alberta is most fortunate in having a few such judges.

Poultry Shows:—Successful Poultry Exhibitions were held during the winter season at Edmonton, Calgary, Lethbridge, Red Deer, Wetaskiwin and Medicine Hat. The judges officiating were Richard Oke, London, Ont., Geo. Woods, Winnipeg, Man., J. Shackleton, Edmonton, Alta., Jos. Hayden, Calgary, Alta., I. H. Emmerson, Lethbridge, Alta., V. T. Richards, Edmonton, Alta., Frank Hailey, Calgary, Alta., P. J. Timms, Calgary, Alta., and J. H. Westbrook, Lethbridge, Alta.

Horticultural Societies: — Excellent and interesting Horticultural Shows were held at Edmonton, Calgary, Medicine Hat, Camrose, Red Deer, St. Albert, Taber, Magrath, Islay, Kinsella and Bellevue. Favorable reports have been received regarding these exhibitions.

New Societies:—Since last year new Agricultural Societies have been organised at Plamondon, Warspite, Magnolia, Goose Creek, Sangudo, Frog Lake, Greencourt and Bear Lake. The first named five societies held their initial fair with a reasonable amount of success in 1920 and the other three will hold their first fair in 1921.

International Live Stock Show:—At the recent International Live Stock Exposition held in Chicago, Canadian exhibits showed up better than in any previous years. The fat beef steers from the University of Alberta made a most favorable impression and won a number of prizes in the strongest possible competition. The champion Clydesdale stallion of the show came from Alberta, and other horses from Saskatchewan and eastern Canada were also very successful. Exhibitors of grain from Western Canada carried off several of the leading honors including the champion cup for the best oats in the show. This distinguished honor came to J. V. Lucas of Cayley, Alberta. Farmers and breeders in this province have every reason to be proud of their past year's record in this competition and feel encouraged to do still better in the coming year.

Respectfully submitted,

ALEX. GALBRAITH,

Superintendent.

LIST OF ALBERTA AGRICULTURAL SOCIETIES AND SECRETARIES WITH
DATES OF FAIRS IN 1920

<i>Society</i>	<i>Date of Fair</i>	<i>Secretary</i>	<i>Address</i>
Alix	July 27-28	W. L. Pettet	Alix
Bashaw	August 4-5	A. J. Frank	Bashaw
Benalto	July 20-21	P. T. McKee	Benalto
Berry Creek (Pan- dora)	Sept. 3	L. E. Helmer	Nateby
Big Valley	August 13-14	Henry Oke	Big Valley
Bowden	October 1	Mrs. W. A. Hills	Bowden
Busby	September 15-16	S. E. Hayward	Busby
Bow Valley (Bas- sano)	September 9-10	E. A. Beck	Bassano
Carmanagay	August 9-10	F. E. Hawkins	Carmanagay
Castor	August 20-21	J. J. Davis	Castor
Chauvin	August 13	P. H. Perry	Chauvin
Chinook	August 5-6	Miss M. E. Rogers	Chinook
Claresholm	July 29-30	J. R. Watt	Claresholm
Cochrane	September 7-8	J. Benyon	Cochrane, Box 295
Colinton	September 22	N. O. Jack	Colinton
Consort	August 12-13	V. M. Sherbino	Consort
Coronation	August 18-19	E. T. Scragg	Coronation
Crossfield	June 23-24	F. L. Watters	Crossfield
Davidsland	August 4-5	A. A. P. McDowell	Davidsland
Didsbury	September 15-16	G. A. Wrigglesworth	Didsbury
Donalda	August 2-3	Wm. E. Porter	Donalda
Durlingville & Bonny- ville, (Bonnyville)	September 8	Dr. S. Sabourin	Bonnyville
Eastern Alberta (Provost)	August 12	S. F. Burgess	Provost
Edgerton	September 18	N. Davidson	Edgerton
Edson	August 25	J. Leyden	Edson
Elk Point	September 10-11	H. J. Ramsbottom	Elk Point
Fort Saskatchewan	Aug. 31-Sept. 1	H. W. Dodge	Fort Saskatchewan
Gleichen	August 12-13	F. L. Mallory	Gleichen
Goose Creek, (Lough- heed)	August 10	F. B. Mundy	Lougheed
Grande Prairie	August 20-21	W. H. Watts	Grande Prairie
Griffin Creek	September 14-15	O. B. Winterstein	Griffin Creek
Hanna	August 9-10	R. G. Fletcher	Hanna
Hays (Lousana)	September 6-7	R. N. Scott	Lousana
Highland (Delia)	August 11	R. P. D'Alton	Delia
High River	August 11	J. A. Massey	High River
Holden	August 12	N. L. Campbell	Holden
Innisfail	July 26-27	W. G. McArthur	Innisfail
Innisfree	September 6-7	W. J. Reid	Innisfree
Irma	August 11	J. W. Milburn	Irma
Irvine	September 16-17	Miss Bessie Price	Irvine
Kitseoty	September 13-14	T. H. Currie	Kitseoty
Lacombe	July 22-23-24	S. H. Welch	Lacombe
Lake Saskatoon	August 17-18	F. Walthew	Lake Saskatoon
Lamont	August 20	G. R. Stewart	Lamont
Langdon	August 14	Walter Aleock	Langdon
Leduc	August 17-18	A. R. Ennis	Leduc
Lloydminster	July 19-20-21	H. Huxley	Lloydminster
Lomond	July 31	W. H. Smith	Lomond
Macleod	August 4-5	R. J. E. Gardiner	Macleod
Mannville	September 8	C. B. Wood	Mannville
Matziwin (Brooks)	September 14-15	D. H. Bark	Brooks
Mid-Pembina, (Bus- by)	September 3	A. D. Gilmer	K. E. Box, R. R. 1. Ex Busby
Milnerton	September 29	J. H. McArthur	Knee Hill Valley
Mosside	September 9	Jno. H. Horner	Mosside

<i>Society</i>	<i>Date of Fair</i>	<i>Secretary</i>	<i>Address</i>
Munson	August 13	L. C. Jackson	Munson
Magnolia	August 27	Earle Bradley	Magnolia
Nakamun & Sion District	September 1	I. B. Nixon	Sion
Nanton	October 4-5	Wm. Robertson	Nanton
Okotoks	August 17-18	E. A. Haynes	Okotoks
Olds	July 28-29	E. L. Grimes	Olds
Onoway	August 31	A. A. Brown	Onoway
Oyen	August 3-4	F. J. Whitlock	Oyen
Paddle River (Barr- head)	September 7	Mrs. P. E. Sebern	Mellowdale
Peace River	August 27-28	D. J. Johnston	Peace River
Plamondon	September 7	A. E. Chevigny	Plamondon
Ponoka	July 20-21	G. E. Clarke	Ponoka
Priddis & Millarville (Priddis)	October 2	E. E. Woodford	R. R. 1, Calgary
Raymond	August 6-7	S. F. Kimball	Raymond
Red Deer	July 12-13-14	J. E. Welton	Red Deer
Retlaw	July 29-30	W. A. Hempel	Retlaw
Richdale	August 5	A. T. Penwarden	Richdale
Rochester	September 21	W. A. Shopland	Rochester
Rocky Mountain House	September 20-21	Wm. Ellenburgh	Rocky Mtn. House
Sangudo	September 14	R. Mielhausen	Sangudo
Sedgewick	August 6-7	V. W. Messenger	Sedgewick
Sibbald	August 2	C. O. Dudley	Sibbald
Spirit River	September 21	F. H. Cramer	Spirit River
Starland (Rowley)	September 15	A. C. Smith	Rowley
Stavely	August 3	E. C. Webster	Stavely
Stettler	July 29-30-31	G. T. Day	Stettler
Stony Plain	August 18-19	Wm. Robertson	Stony Plain
St. Paul	September 14	Ernest Cloutier	St. Paul
Strome-Killam, (Kil- lam)	August 11-12	R. J. McGowan	R. R. 1, Killam
Swalwell	August 5-6	Wm. Waldron	Swalwell
Taber	August 2-3-4	W. C. Blount	Taber
Three Hills	August 9-10	C. P. McDonough	Three Hills
Tofield	August 13	Mrs. Peter Lee	Tofield
Trochu	August 11-12	R. H. Slipp	Trochu
Vegreville	September 3-4	W. H. Morgan	Vegreville
Vermilion	September 9-10	W. E. Sutton	Vermilion
Veteran	August 16-17	D. J. O'Donoghue	Veteran
Viking & Birch Lake District, (Viking)	August 9-10	Wm. McAthey	Viking
Vulcan	September 22	W. A. Howes	Vulcan
Wainwright	September 16-17	Samuel Lewthwaite	Wainwright
Warspite	September 6	W. Pickard	Warspite
Waterhole	September 16-17	H. M. Bailey	Waterhole
Westlock	August 20	M. Gardam	Westlock
Wetaskiwin	July 19-20	R. N. Shaw	Wetaskiwin
Winnifred	August 10-11	G. R. McKee	Winnifred
Youngstown	August 11-12	O. H. Price	Youngstown

EXHIBITION ASSOCIATIONS

Calgary	June 26-July 3	E. L. Richardson	Calgary
Edmonton	July 5-10	W. J. Stark	Edmonton
Athabasca	September 23-24	J. R. Evans	Athabasca
Camrose	July 15-16-17	J. W. Forde	Camrose

The following are the names and addresses of judges who officiated at the fairs and exhibitions during the past season:

<i>Name and Address</i>	<i>Classes Judged</i>	<i>List of Fairs</i>
J. A. Gaudin, Stettler, Alberta	Horses	Wetaskiwin, Donalda, Daysland, Sedgewick, Consort, Veteran, Castor, Byemoor, (Hartsborn), Bonnyville, Elk Point, Bowden, St. Paul, Mihnerton, Millarville, Nanton.
Alex. McKercher, Olds, Alberta	Horses	Sibbald, Oyen, Richdale, Chinook, Hanna, Delia, Youngstown, Munson, Lake Saskatoon, Grande Prairie, Peace River.
W. S. McKinnon, Olds, Alberta	Horses	Carmangay, Red Deer, High River, Gleichen, Vulcan, Crossfield.
T. J. Scott, Edmonton, Alberta	Horses	Rowley, Plamondon, Leduc, Westlock, Stettler, Alix, Benalto.
Thomas Cronie, Calgary, Alberta	Horses	Claresholm, Bassano.
Tom Rawlinson, Innisfail, Alberta	Horses	Mosside, Rochester, Millerville, Colinton, Athabasca, Onoway, Paddle River, Nakamun, Mid-Pembina.
W. R. Lowes, Edmonton, Alberta	Horses	Red Deer, Lloydminster, Lacombe, Innisfail, Olds, Stavely, Macleod, Raymond, Viking, Irma, Holden, Tofield, Lonsana, Cochrane, Vermilion, Pandora.
W. B. Blundell, Fallis, Alberta	Horses	Viking, Goose Creek, Killam, Provost, Chauvin, Leduc, Stony Plain, Lamont, Edson, Magnolia, Bushy, Sangudo.
J. G. Clark, Clark Manor, Alberta	Horses	Edgerton, Green Valley.
R. G. Logan, Edmonton, Alberta	Horses	Mannville, Innisfree, Griffin Creek, Waterhole, Spirit River.
John G. Broadfoot, Loughheed, Alberta	Horses	Bashaw, Swalwell, Three Hills, Trochu, Big Valley.
John Vance, Edmonton, Alberta	Horses	Kitscoty, Didsbury, Edson, Fort Saskatchewan, Warspite, Vegreville.
James Clements, Edmonton, Alberta	Horses	Vegreville, Vermilion.
J. H. Slack, Edmonton, Alberta	Horses	Rocky Mountain House.
D. McDonald, Medicine Hat, Alberta	Horses	Brooks, Irvine, Winnifred.
F. F. Parkinson, Edgerton, Alberta	Horses	Wainwright.
Eric Durno, Calgary, Alberta	Horses and Cattle	Red Deer, Innisfail, Retlaw, Lomond, Taber, Langdon, Okotoks.
James Liddell, Loughheed, Alberta	Horses and Cattle	Camrose, Lloydminster, Bashaw, Swalwell, Three Hills, Trochu, Big Valley.

J. H. McNally, Major, Saskatchewan ..Cattle	..Sibbald, Oyen, Richdale, Chinook, Hanna, Delia, Youngstown, Munson, Pandora, Lousana, Brooks, Irvine, Basano, Cochrane.
Wm. Wilson, Innisfail, Alberta ... Cattle	..Wetaskiwin, Retlaw, Lomond, Taber, Killam, Goose Creek, Provost, Chauvin, Okotoks, Leduc, Stony Plain, Vulcan, Didsbury, Crossfield.
Geo. Hutton, Sr., Lacombe, Alberta Cattle	..Carmangay, High River, Gleichen, Langdon, Westlock, Millet, Busby, Magnolia, Onoway, Mosside, Barrhead, Dunstable, Nakamun, Rocky Mountain House, Bowden, Priddis, Nanton.
Malcolm McColl, Edmonton, Alberta . Cattle	..Grande Prairie, Peace River, Lake Saskatchewan, Griffin Creek, Waterhole, Spirit River.
Wm. Sharp, Lacombe, Alberta .....Cattle	..Olds, Donalds, Consort, Daysland, Sedgewick, Veteran, Castor.
Geo. Davidson, Calgary, Alberta .....Cattle	..Wetaskiwin, Lacombe, Alix, Stettler.
G. R. McMillan, Stony Plain, Alberta ..Cattle	..Claresholm, Stavely, Macleod, Raymond, Stony Plain.
E. W. Bjorkeland, Red Deer, Alberta ...Cattle	..Benalto, Camrose.
James Sidey, Cousins, Alberta .....Cattle	..Viking, Irma, Holden, Tofield, Kitscoty, Wainwright, Edgerton.
D. Cargill, Bakowki, Alberta ....Cattle	..Winnifred.
S. G. Carlyle, Edmonton, Alberta ...Cattle	..Stony Plain, Red Deer, Sedgewick.
A. A. Mitchell, Lloydminster, Alberta..Cattle	..Lloydminster.
A. M. Campbell, Stettler, Alberta .....Cattle	..Rowley, Rochester, Colinton, Athabasca.
A. A. Dowell, Edmonton, Alberta ...Cattle	..Camrose.
J. G. McBeath, Lawsonburg, Alberta...Cattle	..Hartshorn.
J. Chas. Yule, Carstairs, Alberta ....Cattle	..Milberton.
A. Blackstock, Vermilion, Alberta .. Cattle	..Lloydminster, Innisfree, Mannville.
E. B. Roberts, Lloydminster, Alberta Cattle	..Lloydminster.
Herbert Smith, Camrose, Alberta .....Sheep	..Edmonton, Camrose, Innisfail, Lloydminster, Vegreville, Vermilion, Milberton.
Jas. McCaig, Edmonton, Alberta ...Sheep	..Red Deer, Lacombe.
Wm. McKirdy, Napioka, Manitoba ...Clydesdales	..Calgary.
E. B. White, Leesburg, Virginia ....Percherons	..Calgary.
Maj.-Gen. F. L. Lessard, Meadowvale, Ontario .Saddlers	..Calgary.

A. Graham Galbraith, Edmonton, Alberta	... Hackneys and harness horses.	Calgary.
Dean C. F. Curtis, Ames, Iowa	... Shorthorns	... Calgary.
F. W. Vanatta, Kansas City, Missouri	... Herefords	... Calgary.
John Lowe, Elora, Ontario	... Aberdeen-Angus	Calgary.
F. R. Mallory, Frankford, Ontario	... Dairy Cattle	... Calgary.
G. H. Hutton, Calgary, Alberta	... Swine	... Calgary.
John Wilson, Innisfail, Alberta	... Sheep	... Calgary.
W. I. Elder, Brandon, Manitoba	... Clydesdales	... Calgary.
Dean C. F. Curtiss, Ames, Iowa	... Percherons	... Edmonton.
J. M. Gardhouse, Weston, Ontario	... Hackneys and harness horses.	Edmonton.
R. P. Stericker, Chicago, Illinois	... Saddlers and Thoroughbreds.	Edmonton.
Capt. T. C. Robson, London, Ontario	... Shorthorns	... Edmonton.
W. H. Hunter, Orangeville, Ontario	... Herefords	... Edmonton.
G. H. Hutton, Calgary, Alberta	... Aberdeen-Angus	Edmonton.
D. C. Flatt, Hamilton, Ontario	... Holsteins	... Edmonton.
W. T. McDonald, Victoria, B. C.	... Ayrshires and Jerseys	... Edmonton.
W. J. Elliott, Calgary, Alberta	... Swine	... Edmonton.
Herbert Smith	... Sheep	... Edmonton.
L. O. Clifford, Oshawa, Ontario	... Herefords	... Calgary.
J. A. Watt, Elora, Ontario	... Shorthorns	... Calgary.
W. A. McKerrow, St. Paul, Minn.	... Sheep	... Calgary.
F. W. Crawford, Brandon, Manitoba	... Aberdeen-Angus	Calgary.
W. T. McDonald, Victoria, B. C.	... Baby Beef	... Calgary.

REPORT OF THE SUPERINTENDENT OF WOMEN'S INSTITUTES

EDMONTON, March 1, 1921.

HON. DUNCAN MARSHALL,
*Minister of Agriculture,
Province of Alberta.*

SIR:—I beg to submit herewith a report of the Women's Institute Branch for the year 1920.

In presenting a brief sketch of the Women's Institute activities for 1920, I beg to state that the prosperity of the Institutes of Alberta has been due in no small measure to the unselfish service of the women, who, acting as local leaders have given freely of their time and energies. As the number of clubs and enrolment of members has increased, responsible local leadership has become more and more essential in carrying out the purpose for which the Institutes were organized. During the year 1920, 25 new Institutes and 15 Institute Girls' Clubs were organized, each having definite plans of work. The Institutes now number 290 with a membership of approximately 14,500 women.

It is interesting to note that in the past year \$88,795.14 was raised by the clubs for community and charitable purposes.

DEMONSTRATION AND LECTURE WORK

In 1920 practically every Institute in the province was visited by a lecturer, demonstrator or Short Course. The reports received from local organizations indicate that in every instance splendid local co-operation was given and a keen appreciation of this extension feature of the Department was felt.

No. of Foods and Cookery Short Courses	23
No. of Demonstration-lectures given at Foods and Cookery Short Courses	71
Total attendance at meetings	3,831
No. of Sewing Short Courses	12
No. of Demonstration-lectures given at Sewing Courses	25
Total attendance at Sewing meetings	250
Average attendance	12
No. of Home Nursing Short Courses	26
No. of Demonstrations given at Home Nursing Courses	82
Total attendance	3,176
Average attendance	45
Total attendance at Short Courses	7,557
No. of single Demonstration-lectures given	108
Total attendance at Demonstration-lectures	4,204
Number of Lectures given	139
Total attendance at Lectures	5,291
Average attendance at Demonstrations and Lectures	38

No. of Constituency Conferences visited	26
Total attendance at Constituency Conferences	1,934
Total attendance at Short Courses, Lectures and Demonstrations	19,586
No. of places visited	334
No. of meetings held	441

"Make-Your-Dollars-Work-Harder" was the slogan of the Institute speakers and demonstrators for 1920. The Short Course programmes were a development of the slogan as applied to sewing and foods and cookery. The majority of single lectures were also relative to thrift. Other subjects included the following:

- "Rural Sociology."
- "Legal Status of Women and Children in Alberta."
- "Civics."
- "The New Citizen."
- "Institute Work and Programmes."
- "Co-operation between Institutes and Public Schools."
- "Parents' and Teachers' Associations."
- "Hot School Lunches."
- "Organized Recreation."
- "Child Welfare."
- "Public Health."
- "Home Nursing Emergencies."
- "Medical Inspection of Schools."
- "Municipal Hospitals."
- "Hygiene and Sanitation."
- "Diet and Disease."
- "School Hygiene."
- "Value of Milk and Vegetables in the Diet."
- "Canning of Fruits and Vegetables."
- "Proper Selection of Foods."
- "Interior Decoration."
- "Clothing Problems."
- "Textiles."
- "Housewifery."
- "Community Singing."
- "Birds of Alberta."
- "Poultry-raising."
- "Gardening."

The speakers and demonstrators' itineraries were arranged early in the year. Each place visited was notified twice as to the date of the arrival of the Institute worker. Great pains were taken to make the itineraries topographically contiguous that both money and time might be conserved.

ANNUAL PROVINCIAL CONVENTION

The Women's Institute annual convention for 1920 could not be termed a news convention. It was an intensive convention in that the work of the institutes, through the constituency conveners, was given in detail and from these details the delegates gleaned invaluable hints and inspirations to take back to their own community and push onward enthusiastically Institute work in every part of the province.

It was a convention that had a predominate feature and this was music, music that ran through it like a great drama and the music consisted of "the songs that live," the old, old songs that everybody knows and everybody loves. One cannot write of just the exquisite pleasure

the Alberta Women's Institute delegates received from Mrs. Rose Morgan of Columbia University, New York, who came to them, without charging even a fee and brought with her the wonderful secret that everyone possesses within her own community, the medium of entertainment that is so divinely simple and easy that it has been overlooked in the present age of "jazz" and "ragtime" music. Its simplicity is its greatness and modern folk in their mad rush to be up-to-date have lost sight of the fact that songs live because of their chastity, simplicity and artistry. Mrs. Morgan dwelt on the singing of Canadian patriotic songs, dividing them in three groups—"The Maple Leaf," which she defined a pretty song; "O Canada," she taught the delegates to sing to bring out its inspiration, and then she followed with "Land of Hope and Glory," which she said was majestic and imposing—the grandest of our national songs.

NOT A CONVENTION OF RESOLUTIONS

It was not a "resoluting" convention, for the resolutions were few and far between, the greater bulk of them being left to the Provincial Advisory Board. The convention endorsed unanimously a higher minimum wage for girls, raising it from \$9.00 per week, which is set by the Factory Act to \$15.00 per week. Another resolution endorsed was that a free correspondence course be given on food values to mothers by the Department of Agriculture. Considerable discussion centered around three resolutions having to do with education, one dealing with the teaching of mothercraft in the schools, another religious teaching and a third the teaching of French in the public schools.

The mothercraft resolution was defeated because of the difficulty that teachers were not trained, and because many teachers were young men. Regarding religious teaching it was decided to confine it to Bible stories and the Lord's Prayer and not the Ten Commandments, as it was stated that there were different versions of these in different creeds. The teaching of French in the public schools was defeated as it was thought the curriculum was overloaded already and English needed perfecting to such a degree that there was no room for French in the public schools. Another educational resolution to the effect that special stress be laid on the subjects of English, composition, writing, spelling and elementary arithmetic in the public schools was carried unanimously. The Calgary Institute sent in a resolution which was passed requesting the Dominion Government to increase the pensions accorded the dependents of soldiers and this to be regardless of rank.

Further resolutions carried were that the age of consent for girls be raised from 14 to 21 years; that it be a criminal offence for any man and woman to register falsely as man and wife; that no persons be allowed to marry without a clean bill of health; that disapproval be voiced against performing animals because of cruelty in their training; and that teachers be asked to teach and explain a code of laws, requested from the Dominion government, regarding the meaning and abuse of the flag.

Another point brought out in the convention was that the Institutes, according to their constitution may discuss political questions. The meaning of the word "politics"—"measures to promote the welfare of the state" is entirely within the constitution and there should be no misapprehension regarding this.

A vote of thanks for the courtesy and space of The Calgary Herald was passed unanimously.

CONVENTION OF UNANIMITY

It was a convention of unanimity. Not that there weren't differences of opinion backed up with constructive logic, but there were no disgruntled factions—nothing was being "railroaded" through—and everyone kept her eye on the great slogan of the institutes, "For Home and Country." The spirit of unanimity was shown in the election of the Provincial Advisory Board for each officer was returned unanimously. The good will of the convention was shown to Miss McIsaac, the superintendent, and Miss Noble, the president, in the presentation of the beautiful bouquets of flowers.

Like other years, the March snowstorms delayed the delegates. Every year some delegates have been storm-stayed en route and in order to prevent this occurring in future, the Alberta Women's Institutes will hold their convention in June. This was agreed without a dissenting voice, and an invitation was extended to the Federated Women's Institutes of Canada to hold its convention in June, 1921, in conjunction with Alberta.

BETTER SCHOOL MOVEMENT

Mrs. Aylesworth, convener of Education and Better Schools, in her report showed that twenty-five schools have playground equipment owing to the efforts of the Institutes, that twenty-five have been provided with sanitary drinking cups and with towels. At Clive, Olds, Garrington, Carmangay, the hot lunch is an accomplished fact and that an attempt is made to prepare at least one hot dish to supplement the lunch sent by the parents. Mrs. Aylesworth urges the Institutes to provide the school libraries with suitable books specially those of Canadian authors, to visit the schools, to launch campaigns for women school trustees and to get acquainted with the teacher and see that she has a suitable place to board. Twenty-five institutes have given prizes for various competitions in drawing, essays and in agriculture.

CHILD WELFARE AND PUBLIC HEALTH

Mrs. D. R. McIvor, of Cowley, provincial convener of Child Welfare and Public Health, stated that ten institutes had put on Child Welfare campaigns, and had been addressed by Mr. C. Bishop, Child Welfare secretary. Others had been instrumental in establishing hospitals and boards of health. The Fairview Institute in the Peace River country has succeeded in getting two district nurses—with special training in obstetrics. Mrs. McIvor advocated the extension of the Mother's Pension Act to include deserted mothers, a free domestic science correspondence course, especially dealing with food values, for mothers, the encouragement of the establishment of child welfare stations, the entering of Alberta babies in the Canadian Home Journal Better Baby contest, a health crusade similar to the Queen Mary's Health Legion, with a system of giving marks for cleanliness—the stages of progress being marked by the giving of buttons and honour pins. She deprecated the wearing of insufficient, and immodest clothing among girls and suggested an educational cam-

paigned against the present fashions in shoes, owing to their injury in health. She deplored the growing cigarette habit from a health and moral standpoint and in closing advocated her cordial appreciation of the Alberta Health Department.

ALBERTA LEADS IN PROGRESSIVE LEGISLATION

In presenting her report on Laws, Mrs. H. V. Montgomery said that in looking over the year 1919, Alberta leads the whole of Canada in progressive legislation. As instances she cited the Mothers' Allowance Act, the Municipal Hospital Act, the Public Health Nurses Act, the amendment to the Venereal Disease Act, the Factory Act, etc. There are a number of acts up before the present session of the legislature, said Mrs. Montgomery, inclusive of the creation of scholarship funds of \$1,200 for Canadian students in Paris for the purpose of allowing students or teachers to follow up a post-graduate course in that city—only three holding scholarships at the same time. There is an act before the house now granting an equal right to the mother, who is given the same control over education, the estate and the conduct of the children as the father. Another amendment considering the registering of unmarried mothers and their infants by the persons receiving them for accouchement.

HOUSEHOLD ECONOMICS WORK

Miss Bessie McDermand, provincial convener, advocated that every institute should give a five-minute period at every meeting to "Good Marketing," which means not the buying of the cheapest article but the knowledge of the standard of the article required. This year said Miss McDermand, the Alberta Women's Institute demonstrators and a number of W.I. speakers will give demonstrations and lectures on "How to Buy Foods." The short course in Foods and Cookery is planned also according to the present economic needs and the Institutes are taking a strong material step in a "Make-Your-Dollars-Work-Harder" campaign.

GIRLS' CLUBS

One whole day of the convention was given to Girls' Club work and the girl delegates elected their Provincial Advisory Board at the close with the following results:

President, Miss Edna Francisco, Cavendish.

First Vice-President, Miss Alice Gates, Stony Plain.

Second Vice-President, Miss Minnie Page, Elnora.

Secretary-Treasurer, Miss Daisy Hummell, Milk River.

Directors: Miss Evelyn Jochem, Milk River; Miss Marjorie Anderson, Stony Plain; Miss Mamie Johnson, Provost; Miss Clara Smith, Alliance.

Girl delegates brought reports from Botha, Coronation, Stony Plain, Carmangay, Cavendish, Collingwood, Carstairs, Elnora, Argyle, Gem, Milk River, New Dayton, Olds, Stanger, Aldersyde, Wetaskiwin, Daysland, Talbot, Minburn, Queenstown. West Wind is the largest club, the membership being fifty.

ENTERTAINMENT

The entertainment feature of the convention was not overlooked, it consisting of an organ recital given by Herbert Wild, A.R.C.O., vocal solos by Mrs. Cockburn, pianoforte solos by Miss Eva Blasdel, A.T.C.M., while an amateur play, "A Snug Little Kingdom," was put on by the Forbes Robertson Amateur Dramatic Society under the direction of Ethel Reese Burns, who gave a list of suitable amateur plays and a talk on the details of the presentation of those. A reception at Government House concluded a very successful convention.

OFFICERS

The officers elected for 1920-1921 were: President, Miss Isabel Noble, Daysland; first vice-president, Mrs. W. H. Fleming, Alliance; secretary-treasurer, Mrs. A. H. Rogers, Fort Saskatchewan; District Director No. 1 (Northern), Mrs. Jas. Boyd, Vanren; No. 2 (Northern), Mrs. C. A. Gates, Stony Plain; No. 3 (Central), Mrs. A. A. Towns, Coronation; No. 4 (Southern), Mrs. F. Hughes, Cavendish. The conveners of standing committees for the year are: Education, Mrs. Aylesworth, Olds; Public Health and Child Welfare, Mrs. D. R. McIvor, Cowley; Publicity, Mrs. J. F. Price, Calgary; Household Economics, Miss Bessie McDermid, Edmonton; Immigration, Mrs. W. Barss, Delia; Laws, Mrs. H. V. Montgomery, Wetaskiwin; Agriculture, Mrs. Jas. McKay, Provost; National Events, Mrs. Morley, Verdant Valley.

CONSTITUENCY CONFERENCES

It is very gratifying to note the interest the Institutes have taken in their constituency organization. During the months of August and September twenty-nine constituency conferences were held. Not only are these conferences of inestimable value in developing leadership among our women, but they are also a means of creating a fellowship through the sense of a common interest, a common combatting of difficulties and a common aim, that might otherwise be difficult to maintain.

Many schemes for co-ordinating and developing institute work in the constituencies were devised, thereby creating a most important potential connecting link between the constituency organization and the local institutes.

LOAN COLLECTION AND TRAVELLING LIBRARIES

Suggestions and helps in the form of bulletins, sample programmes, reference books, travelling libraries, etc., have been furnished the institutes, and assistance in the preparation of papers and addresses have also been given through the medium of our Loan Collection.

SOURCES OF INFORMATION

In order to render the best possible service to the institutes the W.I. Branch gathers data and information from city and provincial libraries, from U.S.A. bureaus of civic, economic, educational, scientific and social research, from public men and women, from publishing houses and from the various departments of the federal and provincial governments.

PACKAGE LIBRARIES

The best material upon a great many subjects as a rule is usually found in magazines, newspapers, pamphlets, speeches and addresses. Such material is not easily accessible to the great majority of women in the province. The W.I. Branch recognizes this fact and in consequence clips and classifies articles from these sources of information. These in turn are made into package libraries and placed in the Loan Collection. The scope of the work is of such a nature as to supply information upon practically every line of activity characteristic of a rural community.

BULLETINS

During the year the following bulletins were distributed:

- 4,000 copies of "Home Drying of Fruits and Vegetables" by Miss B. McDermand.
- 5,000 copies of "Canning of Meat, Vegetables and Fruit," by Miss B. McDermand.
- 3,000 copies of "Proper Feeding of Children" by Miss B. McDermand.
- 4,000 copies of "Care of the Baby" by Dr. Helen McMurchy.
- 3,500 copies of "Community Song Bulletins."

RELIEF WORK

The Women's Institute Relief Depot was opened in Calgary on December 4, 1919, and all applications for clothing having been filled, was closed on May 31, 1920.

During the fall of 1920 the institutes were again called upon for relief, consequently a depot was opened at Edmonton on September 1.

The following contributions were received and distributed from the Calgary and Edmonton depots:

CONTRIBUTIONS RECEIVED

- Dec. 4, 1919—May 31, 1920—\$6,957.67.
- Dec. 4, 1919—May 31, 1920—50,000 articles of clothing.

RELIEF DISTRIBUTED

- Dec. 4, 1919—May 31, 1920 Clothing relief to 3,593 persons or 660 families.
- Dec. 1, 1920—Jan. 1, 1921—Clothing relief to 182 persons or 26 families.
- Total of 3,775 persons or 686 families.

In addition to the second-hand garments the following new articles were distributed:

- 443 pairs boots.
- 33 doz. boys' knitted sweaters.
- 48½ doz. boys' trousers.
- 11 bolts shirting.
- 20 bolts material for girls' dresses.
- 183 pairs rubbers.
- 15 doz. woollen mitts for children.
- 18 doz. woollen toques.
- 269 pairs socks and stockings.
- 1,045 undergarments.
- 58 bolts flannelette for children's undergarments, baby clothes and nightgowns.
- 14 doz. undergarments.

Total cost - \$6,459.32.

WORK ACCOMPLISHED BY LOCAL INSTITUTES

Unselfishness, loyalty, industry, kindly feeling and attention to detail has placed the 1920 work of the local institutes far in advance of any previous work they have accomplished. Success seems to have attended every effort. In all cases an endeavor was made to meet the need of the community, in fact each institute has a different story of usefulness.

It would be impossible to enumerate here all the admirable accomplishments of the institutes, a few of them, however, I must notice.

BETTER SCHOOL MOVEMENT

Among the many activities of the Women's Institutes perhaps none is more interesting and effective than the Better Rural School project. At least one-half of the institutes in the province have in some way or other done something for the school or schools in their district.

The work of the institutes is very practical. Many of the clubs have cleaned their schools and arranged for caretaking service among themselves.

Many institutes have taken the initiative in securing the government grant for hot school lunch equipment and have been responsible for equipping and arranging for food supply. A number of institutes have built kitchens in the school and furnished suitable equipment so that the school may be used also as the community centre.

A countless number of services have been carried out by the institute-mothers, many schools have been supplied with curtains, plants, pencil sharpeners, flags, flag poles, bubble fountains, good pictures, pianos, organs, victrolas, books, current event magazines, and playground equipment. Thirty institutes gave prizes for school competitions and it is a yearly function with many institutes to co-operate with the teacher in making a Christmas party for the children.

It would be impossible to estimate the value of the Better Rural School project. The results so far seem to indicate that each plan designed for the comfort, health and welfare of the school children has meant not only benefit for the children themselves but also renewed interest in child welfare on the part of the parents.

REST ROOMS AND COMMUNITY HOMES

The keen interest in community buildings in Alberta is principally due to the influence of the Women's Institute. There are now 43 institute-mothered rest rooms and community homes in Alberta and approximately one-third of this number is owned by the local institute. The necessary funds for building and financing the institutions have been secured by soliciting local firms and individuals, also by giving concerts, entertainments, bazaars, etc. In a few instances the rest room property is worth from \$3,500 to \$6,000; however, the usual valuation of building is from \$1,000 to \$2,000.

Although rest rooms and community homes are essentially an out-growth of rural and small town life, one of the city institutes has in co-operation with another women's society successfully established a rest room for shoppers in a central district of the city. The establishment is very complete with a reading room, nursery and tea room. Shoppers from the country have a special invitation to use it as their headquarters.

The activities carried on at the community centres vary according to the needs and wishes of the members of the community. To some districts the community home or rest room means a co-operative market, to others a recreational headquarters, and for others it may be the reading and social centre.

FAIRS

Horticultural fairs have been held by a number of institutes and the enterprise has met with much appreciation. The fairs are an annual feature of many institute programmes.

The Women's Institutes support the school fairs and in many cases take all the local responsibilities connected with them.

DONATIONS AND RELIEF

Many of the institutes in towns and rural districts are the only welfare associations available. The amount and worth of local relief they accomplish cannot be calculated. Several institutes have established bi-monthly sewing classes for the winter months and fully outfitted all the needy in their district.

Donations in money have been made to various funds for the support of commendable institutions and organizations. The Social Service League and European Relief funds received substantial sums from the institutes. Several institutes have assisted in supporting hospitals and nursing homes. A number of institutes have paid for medical attention for poor children in their community. One institute paid a medical bill of \$1,100 for one child.

CANADIANIZATION

Patriotic exercises such as the singing of national songs, display of the flag and recitation of poems recounting the great deeds of great Canadians are a part of the programmes of many institutes, particularly those situated near foreign settlements.

A number of successful institutes are made up of members of several nationalities. In some cases classes in languages are held under the auspices of the institute and those who speak a foreign tongue feel a sincere interest is taken in their customs and look more kindly on Canadian standards.

WOMEN'S INSTITUTE SCHOLARSHIP FUND

In 1919 two institutes started an entirely new feature in Women's Institute work—that is, the Women's Institute Scholarship Fund. Each institute taking up this work must raise \$200.00 which is awarded to a girl in their community and which must be used by her to pay her expenses while attending one of the Agricultural Schools. In 1920 three scholarship funds were raised and three girls sent to agricultural school to study home economics.

A five-day short course touching upon various branches of home economics was given by experts at each centre where a fund was raised. The scholarship was awarded to the student showing the most sincere interest in the short course and obtaining the highest examination marks.

CHILD WELFARE AND PUBLIC HEALTH

It is the aim of the local institutes to so adjust their work that the children of their community may have the opportunity for the best development of body, mind and spirit. With this end in view many local organizations are keeping in touch with all efforts toward improving the surroundings of childhood, are rendering practical assistance to official child welfare agencies, are adding impetus to the child-welfare movement by voicing local child needs and are a means of disseminating up-to-date information necessary for home and community welfare of children.

In 1920 much practical work was accomplished, eleven institutes were instrumental in obtaining a baby clinic at the time of their local fair or on a well advertised date. Eight institutes put on exhibits on the proper feeding of children, the instructions for which were given by the Women's Institute branch.

STUDY PROGRAMMES

Local Women's Institutes are essentially for the mutual benefit of its members and in this instance the study programme plays the largest part. Adult education is the object of various voluntary associations but no club is able to carry it on in better form than the Women's Institutes as they are by the virtue of their constitution made centres for educational extension work. The visit of experts stimulates study throughout the year and makes the Women's Institutes the best "rural women's university" in existence.

OTHER LOCAL ACTIVITIES

The Women's Institutes hold the record for doing the most original type of club work. One of the institutes purchased an emergency chest for the benefit of the community.

All the institutes take a very great interest in public affairs and a number have been responsible for local work in connection with the establishment of municipal hospitals. Many institutes are a training school in public business—studies concerning legal status of women and children, public school curriculum, proportional representation, etc., being in preponderance among programme items. This attention is important. It has sown the seed of an impulse toward civic devotion, dozens of Women's Institutes are making sure that at least one of their members is on the school board, municipal council and hospital board.

Town and district libraries have been started by several institutes during 1920, with the object of adding books each year.

Amateur dramatics is one of the most popular activities the Women's Institutes have taken up for community expression. The work has been systematically arranged, attention being given to voice, interpretation, stage rehearsals and make-up.



CONVENTION OF WOMEN'S INSTITUTE GIRLS' CLUBS

Many Institutes have led in the revival of community singing throughout rural Alberta.

One of the rural Women's Institute Girls' Clubs is editing a community paper which is read at the meetings of the various associations in the district.

Beautifying the home town has been the big aim of numbers of institutes in 1920.

One of the city institutes during 1920 kept in touch with the hospitals and tried to visit all women patients who were from the country and had no friends in the city. It is a purpose of the institutes to make the Women's Institute the organization through which "town and country meet."

The remarkable growth and achievements of the Women's Institutes is a reflection of the quickened interest of the women of the province, the farm women particularly, in the means of advancing agriculture and country life. In no other women's clubs are the members more eagerly seeking and applying the benefits of education, and as a result they are gaining a new competence, assurance, and recognition.

WOMEN'S INSTITUTE GIRLS' CLUBS

The Women's Institute Girls' Clubs have proven themselves to be effective instruments in promoting the interests of the girls, particularly in rural districts. Splendid reports of activities, not only designed for the welfare and happiness of the members, but also for the community at large, have been received. In fact the year 1920, the second year of the clubs' existence, is important in Women's Institute Girls' Club history as the year firmly establishing a recognition of their work and possibilities.

No doubt the plan of organization which provides for a local supervisor to be appointed by the girls themselves has materially aided in promoting satisfaction and success in the clubs. The constitution is such that self-government is taught and girls are given an idea of their responsibilities.

During the year 1920 the number of Girls' Clubs in the Province of Alberta was increased to fifty, with a membership of 950 girls. The work undertaken by the clubs varied according to the needs of the community. Many were interested in organized recreation, others in study along literary, dramatic, handicraft and household economic lines. It will thus be seen that the girls are having their minds filled with wholesome, inspiring and helpful activities.

At the convention held in 1920 the Girls' Clubs appointed a Provincial Advisory Board: this executive voices the needs of the girls and assists in stimulating and harmonizing the work in the various local clubs.

It is the aim of the Women's Institute branch to so supplement the present educational facilities that the members of the Girls' Clubs will not only be educated for efficient service but also for vigorous health and for liberal living.

Respectfully submitted,

MARY MACISAAC,

Superintendent.

REPORT OF THE CROP STATISTICIAN

EDMONTON, December 31st, 1920.

THE HONOURABLE DUNCAN MARSHALL,
Minister of Agriculture.

SIR.—I beg to submit herewith the annual report for the year 1920 of the Crop Statistician's branch.

The season of 1920 may be briefly summarized as a year that has been rather good on the side of production but rather disappointing on the side of business. At the beginning of 1920 farmers had already gone through about three months of winter feeding. Stored feed was very scarce when they started and grazing was entirely lost in the fall months of 1919. At the beginning of the year they were up against a feed shortage, a difficulty in getting feed at all, in some cases very high prices for feed and very low bank accounts in many cases. By the opening of spring, which was rather late, some of the farmers claimed to have paid out to the value of \$60.00 a head, in some cases, for bringing cattle through the winter and a good many had suffered quite a loss, and this applies likewise to horses and to some extent sheep. The pig business was likewise in poor condition—most people had gone out of hogs to a considerable extent—but there was little feed for them if they had had them. This sets out the live stock condition at the beginning of seeding.

The spring opened very favourably for seeding operations. It was not quite as early as usual, especially in the south where the farmers sometimes get out on the land in March and two or three weeks ahead of farmers in Central Alberta. On the other hand so much moisture had penetrated the soil in both the fall and the spring itself that even the driest parts of the country were in pretty good condition for seeding. The rain came in seeding time so frequently that it was at one time thought that the late season was going to interfere with the success of the crop. While the power stock was thin, the number of tractors had increased to some extent and on the whole it is thought that there was considerable increase in the total area of crop in 1919. There was a general anxiety to get all the seed in the ground possible and all the feed crops out of it possible on account of the experience in the previous year in feed shortage.

The seeding was delayed likewise to some extent in Central Alberta and to an unfavourable extent in the Peace River country. The growing season, however, was so favourable in all parts of the province that we had the promise of large yields in all sections. This harvest of very large yields did not happen. In early August we had a very sharp ripening period in the south which would have been in good order if the crop had been as early as usual but a lot of it was in the milk stage and as a result the kernel and likewise the heads suffered reduction in size and there is no doubt that our count of bushels per acre was very materially reduced during these two or three weeks of dry weather. Another reduction that came about by reason of the warm weather was in the

weight of crop and the yield of grain in Central Alberta. Some of the oats and nearly all of the barley were sown rather late and a similar dry harvest period affected these also. People continued to seed this year up until July and this dry spell affected feed grains in Central Alberta before the crop had reached the shot blade, consequently some reduction of yield was suffered here too. In the Peace River country the crop was very good and the unfavourable conditions from late sowing did not seem to be operative on account of the absence of frost until quite late in the season. The limiting factor in the Peace River country was the occurrence of frequent rains during the harvest and threshing seasons. Operations were very much delayed on account of soft ground and on account of grain being too tough to thresh.

While these three limiting factors were distinct in the different districts of the province it is still the case that we have reaped a large crop on the total. At one time the wheat seemed good for a twenty-two bushel average, but this has been finally cut to 20.5 bushels which, perhaps, is still high enough. The oats and barley were likewise lighter than was expected when it came to threshing time.

The hay crop was only fair this year. Pasture was good in the south on account of the early rains, perhaps better than it has been for ten years but the cut of crop in Central Alberta where most of the stored hay comes from was not as heavy as usual. Alfalfa and other tame hays proved good crops on the irrigated lands as usual.

Potatoes were an excellent crop this year. The acreage shows a large increase over last year and the yield was estimated at 17.5 bushels per acre.

An increase in the variety of crops is a feature of importance to the live stock industry. A very favourable sign with respect to the dairy business as well as the feeding of beef cattle is the increased use of the silo. Corn is a successful forage crop in the south and it is, perhaps, making some progress in its northerly march as it did into Minnesota and Manitoba. But more promising at the present time is the prospect of securing large supplies of succulent feed by growing sunflowers for the silo. Dairy men in the Edmonton district and as far north as Westlock are growing sunflowers successfully and the yield is much greater than it is in the case of green oats, which is our standard silage crop in Central and Northern Alberta. The crop of sunflowers that will be grown next year in the province will make a very perceptible increase in the feed resources of the country. This augurs well for the progress of the dairy industry particularly.

Respectfully submitted,

J. McCAG,

Crop Statistician.

MONTHLY WEATHER REPORT FOR THE YEAR 1920.

January

There was much fine bright weather during the month, interrupted by occasional snowfalls which chiefly occurred between the 11th and 15th, and the 19th and 25th. The temperature was for the most part very low from the 13th until the 27th, at other times generally more moderate as the Chinook was prevalent.

EDMONTON.—The month opened with moderate temperatures, nothing below zero recorded till the 12th, a period of fairly heavy snow from the 11th to the 18th, followed by very cold weather till the 28th, snow fell on the 29th, and month closed fine, bright and mild. Winds normal throughout. River open till the 20th; sleighing good. Total amount of bright sunshine, 91.8 hours; snow on ground, 23 inches.

CALGARY.—A number of Chinook winds the first part of month, latter part very cold, about three inches of snow on the ground.

February

The weather of February was on the whole quite fine with much bright sunshine and many comparatively mild days giving a mean temperature well above the average. Southern Alberta was extremely mild, once only was below zero recorded, twice the thermometer rose to 50 and on thirteen other occasions to 40 and over. Owing to the large amount of snow on the ground the frost is reported not to have penetrated very deeply.

EDMONTON.—The weather irrespective of a few light snowfalls or flurries was very fine and for the most part comparatively mild, the chief cold spells were experienced on the 1st and 2nd, on the 13th and 14th, between the 19th and 21st, and on the 26th and 27th. The amount of snow on the ground decreased greatly. Good moisture in the ground and not much frost. Bright sunshine, 148 hours; snow on ground, 14 inches.

MEDICINE HAT.—Farmers laying in supplies for spring work and all hopeful of a good spring and summer.

March

EDMONTON.—The weather was cold from the 2nd to the 6th; mild days and moderate nights until the 10th, when a heavy snowstorm occurred. Last below zero temperature occurred on the 15th and 16th, then becoming mild again until the 22nd. Unsettled weather last week of month with cold, variable winds; snow melted during the greater part of the month with ice rotting in river and unsafe. Month closed fine and bright but cool; six inches of snow on ground; 156 hours of sunshine.

MEDICINE HAT.—No seeding done yet but farmers are making preparations. Ice open on Saskatchewan river in many places.

April

April weather was cold and backward and in consequence very little work on the land was possible, in fact a few localities reported snow on the ground on the 30th.

EDMONTON.—On every night for the first week, below zero temperatures were recorded, the balance of the month was unsettled and backward with unusual frequency of easterly winds. River ice rotted out by the 26th, since then the river has risen eighteen inches. With a little warmth seeding will probably be general by the 6th of May; 127 hours of sunshine.

CALGARY.—Ice nearly all broken up in river; ducks and geese have arrived; gophers out; late spring; nobody on land yet; two inches of snow on ground.

MEDICINE HAT.—Not much seeding done yet; grass beginning to show up.

May

The chief weather features were frequent strong winds, a fairly good rainfall and some periods of fine and warm conditions. Seeding was more or less late but about finished by the close of the month, while the crop outlook from present indications is reported to be an encouraging one.

EDMONTON.—First three days cold with wet snow then fine, bright and warm till the 9th. Balance of the month cool, windy, and unsettled with considerable moisture. No damaging frost since seeding commenced; total hours of bright sunshine, 241. Seeding general by the end of the first week, wheat seeding now practically finished, much oats and barley still to sow. Some wheat already showing. Wild foliage not yet fully opened. Wild strawberries in blossom. Rivers rose for the first half of the month and are now fallen to summer level.

MEDICINE HAT.—Good grass on prairie; crops looking well, seeding nearly finished.

June

The weather of the month was as a rule somewhat cooler than usual with the rainfall above the average in some districts and much below in others. The present crop outlook appears to be very encouraging.

EDMONTON.—Total hours of bright sunshine, 258. Month opened fair and cool, temperature then increased slowly, the 30th closed fine and warm; heavy rain on the 5th and 13th; thunderstorms on the 5th, 11th and 16th, little or no damage. Crops, grasses and garden truck in excellent condition, cattle looking well. Rivers normal with slight rises during the month.

LETHBRIDGE.—The weather conditions for crop development during June in Southern Alberta were only fair. Showers that have occurred have been heavier in some localities than others resulting in irregularities in conditions.

MEDICINE HAT.—Average 10.3 hours daily of bright sunshine during the month. Crops looking fairly well but need rain. Good grass.

July

July weather was warmer than usual with a sufficient rainfall in nearly all districts to ensure a good growth of the crops.

EDMONTON.—With the exception of wet periods from the 2nd to the 5th and from the 22nd to the 25th the weather of the month was fine, bright and warm, sunshine recorded every day with high total; moderate

precipitation but sufficient with previous large amounts. Month closed dull and threatening; better growing conditions could hardly be imagined; thunderstorms on the 2nd, 4th, 21st, 24th and 25th, hail on the 24th, practically no damage. Rivers moderately high all the month, outlook most excellent; sunshine 376 hours.

CALGARY. Crops in excellent conditions except for strip four miles wide by seventy-five miles long north of Calgary.

LETHBRIDGE.—Rain was fairly general in Southern Alberta during July, consequently districts not suffering from drouth during June are in good condition.

MEDICINE HAT.—Harvesting just starting, grain light except in odd patches, good feed on prairie.

August

The weather was warm and dry and very favourable for harvesting in Southern Alberta, and although showers were more frequent in other parts of the West fairly good progress was made.

EDMONTON.—August opened with moderately warm weather which continued until the 17th, afterwards it was inclined to be cool. Rain fell on first three days to the amount of one and a half inches, then only light showers occurred except on the 18th. Crops in excellent shape, some cutting done, but not general. Hay crops and wild fruit excellent; ducks in large numbers; no frost recorded nor reported except in low-lying grounds and no damage heard of; 276 hours of sunshine.

CALGARY.—Ducks and chickens large and plentiful. Crop prospects very good.

MEDICINE HAT.—Harvesting about completed; threshing commenced. Hot and dry nearly all the month; over three hundred hours of bright sunshine.

LETHBRIDGE.—Weather conditions have been favorable for ripening and harvesting of grain in Southern Alberta; seventy-five per cent. of wheat now cut and good start made on coarse grains. The feed situation good.

September

The weather of the month was warmer than usual and showers were of rather frequent occurrence, but no general heavy rains were recorded except between the 23rd and 25th when it rained very heavily in all districts exclusive of Southern Alberta. In some localities threshing was reported finished, in others it has been delayed by wet weather.

EDMONTON.—467 hours of bright sunshine. September opened clear and warm with brilliant sunshine. From the 22nd to the 27th there was fine steady rain and on the 28th a killing frost. Crops excellent, threshing in this and surrounding districts finished.

MEDICINE HAT.—Threshing about completed. Stock in good condition. Most farmers have enough feed for their stock to winter. Not much summerfallow.

CALGARY.—Crop 75 per cent. harvested; grain grading very good. Excellent month for harvesting; leaves on trees beginning to fall.

October

The weather was warmer than usual except in the western portion of Alberta. Threshing was completed in some places, in others it was delayed by bad weather.

EDMONTON.—Total hours of bright sunshine, 158. October opened cloudy and warm, becoming cold and damp with light snowfalls from the 21st to the 30th, inclusive; good average sunshine; threshing still in progress; crops very good; plowing still proceeding.

CALGARY.—October was an ideal month for outside work; threshing completed; considerable amount of fall plowing done; geese flying south.

MEDICINE HAT.—Threshing completed; some farmers busy fall plowing.

November

The weather was much milder than it usually is in November with very little precipitation in Alberta.

EDMONTON.—November was noticeably mild throughout with fair average sunshine and light intermittent snowfall. All outside work in full operation; river still has open reaches. First ice came down on the 8th; bright sunshine 104 hours.

CALGARY.—Very late fall; unusually mild for the month of November and very little snowfall, no snow on ground; skating on river.

MEDICINE HAT.—Some farmers plowing, in most cases ground frozen too hard. All fairly well provided with fodder and fuel for winter.

December

The mean temperature in Alberta was lower than it usually is in December.

EDMONTON.—Total hours bright sunshine, 65. December weather was moderate, only minus temperatures showing from the 17th to the 26th; sleighing commenced the 26th; heavy traffic over river on the 24th.

CALGARY.—Two and a half inches of snow on the ground; 22 inches of ice on the river. Cattle doing well; lots of hay in the country.

MEDICINE HAT.—The weather of the month was excellent for stock grazing out.

MAXIMUM AND MINIMUM TEMPERATURES FOR 1920.

STATION		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
NORTH SASKATCHEWAN RIVER													
Arcade	{ Maximum	43	42	50	58	76	83	94	97	85	81	52	42
	{ Minimum	51	-15	-20	-20	26	27	10	32	24	16	4	29
Calmar	{ Maximum	48	46	52	54	76	78	91	86	78	67	57	44
	{ Minimum	54	-23	-33	-25	23	28	35	31	31	8	-6	30
Campsie	{ Maximum	50	..	..	..	79	77	92	86	77	62	54	46
	{ Minimum	61	..	..	..	24	28	36	28	22	14	-3	29
Daysland	{ Maximum	36	43	53	56	75	27	96	92	83	73	57	41
	{ Minimum	-42	-15	-29	19	25	27	38	32	33	13	4	27
Edmonton	{ Maximum	44	45	50	54	79	80	93	85	80	72	54	44
	{ Minimum	-46	-18	-28	-15	29	29	13	34	24	15	3	25
Elk Point	{ Maximum	37	43	47	46	77	79	93	89	80	70	47	36
	{ Minimum	-50	-31	-34	-23	25	26	11	33	26	15	-2	24
Five Lakes	{ Maximum	42	48	54	55	88	83	94	87	78	65	53	45
	{ Minimum	-43	-14	-26	-40	28	30	42	35	25	15	5	23
Halkirk (Emsburg)	{ Maximum	39	41	46	54	74	84	96	90	79	75	45	41
	{ Minimum	-34	-9	-22	-7	26	33	46	37	24	16	0	25
Lloydminster	{ Maximum	..	..	..	55	75	77	..	..	79	56	46	..
	{ Minimum	..	..	..	14	10	30	..	..	26	24	7	..
Nordberg	{ Maximum	44	50	52	54	68	78	85	85	75	68	50	47
	{ Minimum	48	22	-34	29	17	21	30	23	17	8	-11	22
North Cooking Lake	{ Maximum	43	45	45	49	76	83	89	84	79	72	51	45
	{ Minimum	-39	-13	-20	-9	27	31	42	39	25	19	5	..
Ranfurly (Waitefield)	{ Maximum	37	43	49	50	78	80	94	90	84	76	..	..
	{ Minimum	-52	-27	-35	24	25	25	42	30	24	15	..	..
Rocky Mountain House	{ Maximum	47	51	62	..	73	83	91	89	..	..	59	..
	{ Minimum	-38	-20	-39	..	17	20	30	18	..	..	17	..
Sedgewick	{ Maximum	40	45	..	53	..	..	..	..	..	..	..	..
	{ Minimum	-50	-20	..	-19	..	..	..	..	..	..	..	..

Sion	{ Maximum Minimum	38 -57	. . .	. . .	74	75	93	. . .	73	60	50	47
Stry	{ Maximum Minimum	37 -62	42 -39	43 45	77 25	77 25	87 41	84 25	80 20	66 14	56 2	40 -24
Vegreville	{ Maximum Minimum	. . .	. . .	. . .	82	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Vermilion	{ Maximum Minimum	36 -52	40 -28	43 -34	78 27	77 26	43 40	88 97	82 83	76 82	52 52	38 -27
Wadena	{ Maximum Minimum	33 -45	40 -16	38 33	75 24	83 26	. . .	97 30	83 20	82 11	52 3	40 35
Wetaskiwin	{ Maximum Minimum	45 -47	48 -20	45 30	81 22	86 20	94 38	89 32	85 25	69 12	60 0	48 -30
Youngstown	{ Maximum Minimum	. . .	. . .	. . .	66 7	62 56	96 44	. . .	. . .	. . .	. . .	. . .
THE RED DEER RIVER												
Alix	{ Maximum Minimum	44 51	46 -20	51 -34	87 27	84 30	96 43	97 33	89 24	85 11	59 5	42 31
Alask	{ Maximum Minimum	35 -37	. . .	. . .	76 22	73 28	. . .	93 36	85 27	. . .	46 0	43 -23
Berry Creek	{ Maximum Minimum	43 -41	44 -11	43 -29	77 29	84 31	96 40	96 33	82 24	. . .	. . .	. . .
Harmattan	{ Maximum Minimum	47 -49	47 -13	50 32	73 20	80 24	86 35	. . .	83 20	79 8	59 14	48 34
Hillsdown	{ Maximum Minimum	48 -43	45 -9	51 -25	79 27	84 30	93 96	89 35	81 26	73 11	56 3	38 27
Jenner	{ Maximum Minimum	. . .	. . .	. . .	. . .	. . .	. . .	96 89	. . .	83 48	48 2	46 3
Lacombe (Ex. Farm)	{ Maximum Minimum	44 -50	46 -16	55 30	76 23	80 27	91 32	92 29	86 24	78 9	59 6	46 30
Olds	{ Maximum Minimum	44 -39	49 -9	49 -25	79 22	79 31	85 42	88 31	82 25	. . .	52 5	49 29
Periback	{ Maximum Minimum	41 -44	45 -5	42 22	75 26	85 32	94 45	92 39	83 26	77 17	52 1	50 27
Red Deer	{ Maximum Minimum	42 -51	48 -17	53 -33	75 24	80 30	90 40	92 32	82 26	75 11	58 11	45 39

Marble	{ Maximum Minimum	42 -31	52 -10	65 -20	63 -4	72 30	87 31	93 45	95 40	85 27	82 10	58 59	55 -26
Medicine Hat	{ Maximum Minimum	46 -40	44 -5	62 -24	66 2	82 31	88 32	98 46	95 45	86 29	85 79	59 -1	59 -21
Okotoks	{ Maximum Minimum	52 -32	47 -10	52 -24	52 -8	69 17	76 32	84 43	87 36	79 24	79 14	45 -7	45 -21
Peki-ko	{ Maximum Minimum	57 -35	54 -17	56 -32	54 -23	70 15	75 21	84 30	85 28	78 15	75 2	55 -19	50 -22
Pincher Creek	{ Maximum Minimum	50 -26	47 -10	56 -24	59 -4	70 25	82 31	85 40	85 37	77 24	71 12	53 -6	46 -13
Ronolane	{ Maximum Minimum	44 -42	46 -5	64 -30	67 1	76 20	87 26	96 42	93 35	86 24	82 18	58 -4	50 -28
Strathmore	{ Maximum Minimum	45 -39	44 -12	44 -27	54 -8	73 19	81 33	89 42	88 37	78 27	78 57	47 -4	47 -25
Suffield	{ Maximum Minimum	42 -41	44 -25	54 -26	62 -6	77 27	85 27	94 43	96 39	87 26	83 18	57 -2	49 -28
Twin Lakes	{ Maximum Minimum	47 -35	47 -12	54 -23	56 -4	69 24	81 30	89 38	88 32	81 30	80 7	53 -12	55 -15
Rocky Mountains													
Banff	{ Maximum Minimum	42 -47	41 -15	51 -24	56 11	70 23	81 28	88 37	89 28	78 27	68 18	44 -6	39 -23
Lake Louise	{ Maximum Minimum	38 -53	39 -26	48 -33	52 -22	65 16	72 21	84 25	90 19	78 20	78 61	47 16	37 30
Mountain Park	{ Maximum Minimum	45 -37	45 -10	45 -35	45 -21	52 15	70 24	85 29	81 27	71 25	61 1	..	..
Athabasca River													
Athabasca Landing	{ Maximum Minimum	44 -38	43 -27	45 -34	52 -25	76 30	78 29	88 41	82 31	77 24	69 10	54 2	45 -27
Athabasca	{ Maximum Minimum	42 -57	46 -36	48 -41	58 -23	82 25	77 28	93 27	86 31	78 20	74 7	58 -3	40 -28
Edson	{ Maximum Minimum	48 -51	53 -17	56 -29	56 -15	77 22	80 26	90 34	87 28	80 25	65 10	65 -11	46 -28
Entrance	{ Maximum Minimum	49 -49	50 -21	50 -25	61 -12	72 21	80 26	91 33	89 28	80 24	74 8	52 8	48 -26

MAXIMUM AND MINIMUM TEMPERATURES FOR 1920.—(Continued).

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fort McMurray	33	45	51	58	82	82	91	88	79	73	52	29
	{ Maximum											
	{ Minimum	-36	-40	27	24	24	37	30	27	10	-3	-28
Jasper			45	55	69	82		87	73	71	47	47
	{ Maximum											
	{ Minimum		-15	-10	20	30		33	30	15	-3	-15
Meenook	44	42	47	52	78	79	90	84	77	71	53	41
	{ Maximum											
	{ Minimum	41	-12	27	30	30	42	39	25	16	7	-20
Wabasca	48	49	53	58	82	80	97	89	77	77		
	{ Maximum											
	{ Minimum	52	-38	-31	17	30	46	38	27	12		
Peace River												
Fort Vermilion	26	46	43	55	79	78	91	88	77			
	{ Maximum											
	{ Minimum	-59	-41	-47	38	17	30	27	15			
Grande Prairie	42	45	47	50	69	76	89	86	72	58	52	37
	{ Maximum											
	{ Minimum	-47	-12	22	12	31	40	32	28	13	2	20
Girouard	44	45	50	54	73	79	93	83	78	65	50	40
	{ Maximum											
	{ Minimum	55	-40	35	17	32	40	33	23	15	29	-25
Peace River Crossing	44	50	54	54	83	84	95	91	82	63	57	38
	{ Maximum											
	{ Minimum	60	-38	36	27	30	41	34	23	12	11	31

PRECIPITATION AS TAKEN FROM METEOROLOGICAL REPORTS 1920

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
NORTH SASKATCHEWAN													
RIVER DISTRICT													
(Average for dist., 19.72)													
Argyle	2.15	...	2.00	0.53	1.79	3.62	4.20	0.79	0.86	0.97	0.19	0.76	17.86
Calmar	1.50	0.28	1.21	1.56	2.14	3.64	2.88	0.84	1.51	0.89	0.35	0.39	17.19
Campsie	1.83	...	...	...	2.06	2.18	3.76	3.98	2.16	0.60	0.37	0.23	17.17
Davshand	2.20	0.62	2.23	1.06	2.92	2.61	2.89	0.08	1.25	0.72	1.00	1.90	19.48
Edmonton	2.02	0.30	1.26	0.84	2.43	4.49	2.33	1.97	1.31	0.78	0.18	0.25	18.16
Elk Point	1.31	0.50	1.48	0.61	2.67	3.33	3.64	0.68	3.36	1.00	0.65	0.60	19.83
Five Lakes	1.50	0.31	0.73	1.48	2.03	2.85	2.69	1.42	2.18	0.59	0.41	0.35	15.54
Halkirk (Emsburg)	0.90	0.15	0.58	1.13	2.73	2.13	2.08	0.30	0.94	1.00	0.13	1.09	13.16
Lloydminster .....	...	...	...	0.16	0.99	3.11	...	...	1.15	0.64	0.22	...	6.27
Nordegg	2.15	0.25	2.85	1.27	1.16	1.25	2.78	2.51	0.48	0.37	0.52	0.30	15.89
North Cooking Lake	2.15	0.55	1.55	1.02	2.34	3.76	2.52	2.03	1.85	0.67	0.21	0.88	19.53
Ranfurly (Waitefield)	1.60	0.20	1.77	0.72	2.64	6.27	2.45	1.52	2.13	0.72	...	...	20.02
Rocky Mountain House	0.26	0.51	1.60	...	1.95	2.14	4.59	4.24	...	...	0.13	...	15.42
Sion	2.25	...	...	...	1.31	3.40	1.15	...	1.30	0.32	0.11	0.30	10.44
Stey	2.28	0.41	1.18	0.83	4.30	1.92	2.76	0.77	3.20	1.35	0.23	0.63	22.86
Vermilion	1.05	0.05	1.01	0.44	1.67	6.63	3.48	1.22	2.48	0.84	0.39	0.55	19.81
Wadena .....	...	...	...	...	0.80	2.35	...	0.57	0.81	0.67	...	...	5.20
Wetaskiwin	0.60	0.10	1.70	0.65	1.00	1.42	2.25	0.25	1.25	1.10	0.20	0.20	10.72
Youngstown .....	...	...	...	0.38	1.58	...	3.63	...	...	...	...	...	4.99
THE RED DEER RIVER													
District													
(Average for dist., 11.50)													
Alix	1.16	0.67	1.58	2.40	2.31	1.75	1.79	0.09	0.76	1.01	0.23	...	13.59
Alaska .....	...	...	...	...	0.74	2.34	...	0.45	1.17	...	...	...	4.79
Berry Creek .....	...	...	...	0.31	1.13	1.60	3.63	0.51	0.76	...	...	...	7.31
Harmattan	1.50	0.58	1.10	1.96	1.45	0.64	3.54	...	1.19	0.80	0.25	0.40	13.41

PRECIPITATION AS TAKEN FROM METEOROLOGICAL REPORTS 1920 (Continued).

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Hillsdown ..	1.25	0.67	1.20	2.15	1.21	0.52	1.12	0.25	0.41	0.36	0.30	0.55	9.99
Lacombe (Exp. Farm)	1.24	0.40	0.90	2.23	1.63	1.81	1.52	0.38	1.55	0.72	0.01	0.24	12.61
Olds ..	2.05	0.95	0.98	1.65	1.40	0.48	3.25	0.62	0.72	...	0.20	0.30	12.60
Peelbeck ..	...	0.10	1.00	0.70	1.70	1.97	3.17	T	0.77	0.56	...	...	10.22
Red Deer ..	1.98	0.38	1.15	2.12	1.40	1.56	1.18	0.28	1.38	0.93	0.10	0.35	12.81
Springdale ..	0.99	0.75	1.65	2.76	3.24	2.27	...	0.69	1.60	0.74	0.47	0.40	15.56
Stettler ..	0.50	...	2.10	1.85	2.33	2.21	1.49	0.42	0.70	0.71	...	1.20	13.51
The Bow River District	...	...	...	...	...	...	...	...	...	...	...	...	...
(Average for dist., 12.05)	...	...	...	...	...	...	...	...	...	...	...	...	...
Bassano ..	1.33	0.50	0.68	2.00	1.88	0.44	3.79	0.01	...	0.74	0.10	0.58	12.05
Brooks ..	1.05	0.15	1.35	1.43	1.08	1.15	1.82	...	...	1.00	0.01	...	9.04
Brooks (2) ..	0.55	0.15	0.75	...	...	...	...	...	...	...	...	...	1.45
Calgary ..	1.17	0.99	0.37	2.14	0.91	1.34	4.94	0.09	0.33	1.40	0.10	0.55	14.42
Dalmeid ..	...	...	0.60	1.50	0.80	0.71	3.67	0.11	0.04	1.66	0.13	0.30	9.61
Expause Coulee (Vauxhall) ..	1.30	0.40	1.20	0.99	1.09	0.85	3.12	0.02	T	1.07	0.11	1.36	11.51
Foremost ..	...	...	0.83	1.07	2.13	1.41	2.36	0.26	...	...	...	...	6.16
Gem ..	...	0.30	...	...	1.42	0.43	1.99	0.05	0.01	0.53	...	0.10	7.33
Gleichen ..	1.53	1.60	0.42	1.08	1.28	1.56	2.11	0.25	0.00	0.52	0.15	0.42	10.92
High River ..	2.20	2.20	2.00	3.00	2.15	0.49	4.89	...	0.18	0.77	0.45	...	18.83
Leithbridge (Exp. Farm) ..	0.84	1.21	0.89	4.37	1.66	0.40	2.59	0.20	0.05	0.99	0.06	0.79	14.05
Lundbreck (Livingstone) ..	...	2.10	1.45	3.20	1.80	0.58	2.14	0.18	0.05	0.25	0.25	0.20	12.50
Macleod ..	1.20	2.60	0.50	2.89	1.69	0.66	3.48	1.13	0.00	1.13	0.20	0.50	15.00
Medicine Hat ..	1.65	0.30	0.97	0.67	1.28	1.48	2.03	0.23	0.00	1.28	0.01	0.84	10.74
Okotoks ..	0.55	0.75	0.80	3.14	1.42	1.49	4.86	0.01	0.31	1.17	0.25	0.38	15.13
Pekisko ..	2.25	2.10	1.43	3.54	1.18	0.81	4.59	0.16	0.64	0.40	0.20	0.13	17.43
Pincher Creek ..	2.10	2.10	1.34	3.86	1.54	0.56	2.90	0.87	0.06	1.03	0.15	0.25	16.76
Ronlame ..	1.55	0.35	0.17	0.90	2.10	0.66	2.22	...	0.03	1.01	...	1.00	9.99

Strathmore	1.05	0.65	0.50	2.11	1.83	1.72	2.06	...	1.01	0.06	0.50	11.49
Suffield	1.09	0.08	0.34	0.78	1.03	1.01	2.92	0.07	0.80	...	0.65	8.87
Twin Lakes (Kimball) ..	2.15	2.60	1.50	2.91	2.79	1.96	2.75	1.09	1.35	0.50	0.25	19.96
ROCKY MOUNTAINS												
(Average for dist., 19.38)												
Buff	3.24	1.09	1.46	1.63	1.25	1.25	1.86	0.27	0.90	0.22	1.03	15.96
Lake Louise ..	5.47	0.65	2.27	1.71	1.89	1.35	1.62	0.41	...	2.41	2.01	22.16
Mountain Park ..	1.95	2.25	1.70	1.50	1.53	0.37	2.60	3.05	2.82	...	...	20.03
ATHABASCA RIVER DISTRICT												
(Average for dist., 1792)												
Athabasca Landing ..	1.75	0.10	1.00	2.96	3.66	7.56	1.60	1.81	0.76	0.30	0.30	24.38
Athabasca ..	2.08	0.15	0.55	1.00	3.61	6.73	2.96	1.42	0.69	0.16	0.28	22.87
Edson	0.69	0.10	1.13	2.39	1.48	2.08	2.11	3.39	0.35	...	0.50	17.30
Entrance ..	...	0.68	2.20	2.90	1.56	1.27	1.82	2.89	0.54	1.25	...	16.95
Fort McMurray ..	1.05	0.45	0.84	0.65	1.27	4.22	0.85	1.42	1.61	0.37	1.32	17.88
Jasper ..	...	...	0.91	0.42	...	0.47	...	1.63	1.38	0.37	0.54	6.00
Meenook ..	2.29	0.12	0.40	0.81	3.42	6.59	1.79	1.51	0.79	0.44	0.58	21.81
Wabasca ..	2.10	...	0.59	0.33	2.15	3.76	1.02	2.51	0.38	...	...	16.50
PEACE RIVER DISTRICT												
(Average for dist., 15.81)												
Fort Vermilion ..	0.25	0.15	0.15	0.10	1.17	2.48	1.15	2.28	...	...	...	10.28
Grande Prairie ..	3.85	0.20	2.12	1.82	1.15	3.17	2.52	2.66	1.65	0.43	0.75	22.12
Grouard ..	3.00	T	0.45	0.37	2.35	4.30	2.10	2.48	0.35	0.10	0.50	18.89
Peace River Crossing	1.40	T	0.45	...	1.99	1.43	1.86	2.28	0.00	0.50	0.60	11.98

ANNUAL PRECIPITATION FROM 1911 TO 1920, INCLUSIVE

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	Average
NORTH SASKATCHEWAN RIVER											
Ayle							9.35	12.01	15.19	17.86	13.61
Calmar							11.18	14.93	19.88	17.19	16.54
Campsie	17.43	10.70	18.34	24.51	16.20	15.98	11.55	14.10	16.85	17.17	16.28
Day-Land	0.65	20.87	14.78	22.63	18.36	25.27	15.17	15.65	15.99	19.48	16.88
Edmonton	20.67	20.18	19.55	25.29	18.64	20.92	15.25	17.86	16.43	18.16	19.29
Elk Point							1.86	10.30	15.57	19.83	11.89
Endiang	16.78	17.77	13.09	19.21	4.33	23.83	11.67				15.09
Five Lakes	18.55	16.67	18.31	22.73						15.54	18.36
Halkirk (Emsburg)	20.69	21.63	13.37	20.11	18.75	28.57	10.36	8.07	17.97	13.16	17.26
Lloydminster		11.56	7.64	2.14						6.27	6.90
Lowland	14.33	20.44	9.83	19.75	16.80						16.23
Nordsee						16.28	22.68				
N. Cooking Lake								13.99	16.55	15.89	17.07
Ranfurly (Wairfield)			20.32	22.93	15.82	26.40	12.08	14.58	14.10	19.53	16.07
Reky. Mountain House							22.53	16.82	13.64	20.02	18.50
Sion	84.36	15.70	21.79	28.38	19.30	23.71	19.50	10.14	10.51	15.42	16.85
Stry								12.15	11.61	10.44	24.49
Vermilion			5.06	0.94	1.78	12.00	4.04	3.71	16.57	22.86	17.19
Wadena			6.18	11.02	12.87	18.31	4.69		10.03	19.81	7.17
Wetaskiwin	36.50	12.51	16.97	0.80					7.21	5.20	9.35
Youngstown								10.23	7.85	10.72	13.65
									6.23	4.99	5.61
Tire Red Deer River											
Alx	22.34	20.14	11.74	15.45	18.02	26.37	16.06	12.51	17.92	13.75	17.43
Alsask			3.11	12.69	6.84		6.54	8.21	7.75	4.70	7.12
Berry Creek									1.47	7.34	4.40
Didsbury	23.35	22.02	19.81	17.35	28.33	35.25	16.52	8.21	11.25		20.23
Harmatian	19.13	22.62	18.29	16.09	29.03	29.98	17.44		12.39	13.41	19.82

Hillsdown	23.43	16.30	10.33	19.03	17.49	15.60	15.06	10.08	14.17	9.99	15.14
Lacombe (Exp. Farm)	21.44	21.83	4.74	18.29	17.22	22.96	15.25	12.75	16.89	12.61	16.39
Olds .....	.....	.....	.....	10.85	.....	29.51	8.21	6.19	12.61	12.60	13.32
Perbeck .....	.....	.....	9.43	16.26	25.79	17.67	.....	6.03	18.24	10.22	14.80
Springdale .....	.....	.....	10.50	20.55	21.11	23.48	17.19	13.11	24.15	15.56	18.20
Stettler .....	.....	.....	.....	.....	.....	23.48	17.19	13.11	24.15	15.56	13.11
Red Deer	17.75	.....	.....	26.73	19.47	22.79	16.58	9.10	13.40	12.81	17.33
THE BOW RIVER DISTRICT											
Bassano .....	.....	.....	.....	1.10	.....	14.57	12.38	6.81	20.67	12.05	11.29
Brooks (1)	17.60	8.08	1.13	0.05	.....	14.84	5.68	6.69	11.01	9.04	8.23
Brooks (2) .....	.....	11.36	13.89	9.51	10.06	.....	6.80	.....	2.93	1.45	8.00
Calgary	19.99	20.14	17.38	17.71	18.24	13.91	11.14	9.12	12.21	14.42	15.45
Dalmead .....	.....	.....	.....	.....	.....	.....	.....	.....	11.96	9.61	10.78
Expansive Coulee .....	.....	.....	0.87	10.41	15.14	19.44	11.48	6.54	9.94	11.51	10.70
Foremost .....	.....	.....	.....	.....	.....	13.57	1.83	.....	5.28	6.16	6.71
Gem .....	.....	.....	.....	.....	.....	.....	12.93	7.75	13.92	7.33	10.48
Gleichen	13.63	10.34	11.41	8.63	.....	15.93	9.17	5.08	12.72	10.92	10.87
High River	17.03	8.90	12.72	2.00	.....	.....	.....	.....	15.36	18.83	12.47
Jethbridge (Exp. Farm)	21.19	13.21	14.17	17.58	17.40	25.88	11.93	8.94	13.36	14.05	15.77
Landbreck .....	.....	.....	4.46	14.61	25.52	22.47	18.35	11.01	10.21	12.50	14.89
Macleod	23.34	17.29	17.49	4.38	16.57	21.45	14.48	9.70	12.39	15.00	15.50
Medicine Hat	16.04	9.78	12.65	12.17	16.13	17.90	13.12	10.03	7.66	10.74	12.65
Okotoks	15.41	17.54	9.80	8.38	21.55	15.53	10.89	10.67	15.46	15.13	11.03
Pekisko	24.02	25.68	24.60	12.69	38.00	32.18	22.55	21.29	23.81	17.43	24.22
Pincher Creek	19.26	9.40	.....	12.28	27.57	24.99	17.56	15.68	16.17	16.76	17.74
Ronolane .....	.....	.....	0.73	8.10	13.93	18.32	9.27	7.01	8.73	9.99	9.51
Strathmore .....	.....	.....	10.88	13.50	18.83	14.47	12.77	.....	16.70	11.49	11.09
Sudfield .....	.....	.....	1.13	5.81	14.71	19.58	9.46	6.01	6.98	8.87	9.06
Sundial	12.37	8.76	11.09	6.63	14.86	12.93	.....	.....	.....	.....	11.10
Twin Lakes (Kimball) .....	.....	.....	.....	6.40	32.60	30.71	22.90	18.01	16.69	19.96	21.03
ROCKY MOUNTAINS											
Banff	19.17	19.07	16.37	17.69	23.36	25.24	19.29	18.18	14.68	15.96	18.93
Lake Louise .....	.....	.....	.....	.....	25.71	5.54	.....	6.96	13.96	22.16	14.86
Mountain Park .....	.....	.....	.....	.....	24.16	34.50	11.91	.....	.....	20.63	23.40

ANNUAL PRECIPITATION FROM 1911 TO 1920, INCLUSIVE. (*Continued*).

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	Average
ATKINSON RIVER											
Atkinson Landing	17.03	12.38	19.85	18.29	12.96	10.07	13.54	13.74	20.11	24.38	17.94
Atkinson				2.10				10.29	14.90	22.87	15.40
Edson							6.38	3.58	11.40	17.30	8.15
Emmance							10.45	6.20	14.25	16.97	11.96
Jasper							7.99	8.46	7.42	6.00	7.46
Meatook							....	17.06	21.31	21.81	20.06
Wabasca						15.87	13.53	14.56	11.28	16.20	14.27
PEACE RIVER DISTRICT											
Fort Vermilion	11.57	9.81	14.32	9.08	7.74	12.00	8.71	11.95	16.10	10.28	11.15
Grande Prairie			8.06	6.90		12.10	17.67	7.86	20.28	22.12	13.37
Ground			....	....				10.01	17.06	18.89	15.32
Peace River	17.17	5.38	23.99	9.05				10.36	14.29	11.98	13.17

SUMMARY OF THE ACREAGE AND YIELDS OF THE LEADING GRAINS
DURING THE LAST TEN YEARS.

	Year	Crop Area in Acres	Total Yield in Bushels	Yield per Acre	Average Yield
Spring Wheat	1920	4,035,003	82,712,738	20.50	18.53
	1919	2,827,935	33,935,224	12.00	
	1918	3,018,371	23,090,544	7.65	
	1917	2,622,853	51,805,839	19.00	
	1916	1,549,075	41,163,471	24.18	
	1915	1,637,122	58,830,704	35.93	
	1914	989,561	15,102,083	15.26	
	1913	1,043,114	20,360,104	19.51	
	1912	957,874	17,434,774	18.20	
	1911	757,493	15,730,238	20.75	
Winter Wheat	1920	37,990	712,777	18.76	20.55
	1919	38,475	639,450	16.62	
	1918	44,065	660,975	15.00	
	1917	51,704	1,023,173	20.00	
	1916	18,663	447,475	23.89	
	1915	31,954	1,257,985	39.37	
	1914	49,930	837,204	16.77	
	1913	83,719	1,250,129	14.93	
	1912	120,811	2,395,875	19.83	
	1911	182,671	4,336,749	23.74	
Oats	1920	3,089,757	115,079,241	37.25	35.09
	1919	2,329,025	65,725,085	28.22	
	1918	2,651,548	60,322,717	22.75	
	1917	2,667,291	85,726,170	32.14	
	1916	1,394,927	60,798,239	43.78	
	1915	1,570,596	90,582,694	57.66	
	1914	1,147,382	34,597,117	30.15	
	1913	1,221,450	44,078,325	36.09	
	1912	971,969	37,085,234	38.15	
	1911	669,827	27,604,993	41.21	
Barley	1920	480,666	12,740,071	26.50	25.15
	1919	412,212	10,562,406	25.50	
	1918	470,073	7,756,204	16.50	
	1917	462,726	9,984,789	22.56	
	1916	297,967	8,477,232	28.64	
	1915	374,062	12,761,187	34.11	
	1914	340,992	7,847,640	23.01	
	1913	333,462	8,645,812	25.92	
	1912	225,055	6,287,112	27.94	
	1911	163,302	3,037,584	29.41	
Flax	1920	103,689	725,910	7.00	7.73
	1919	47,112	221,897	4.71	
	1918	95,920	479,600	5.00	
	1917	139,527	777,690	5.60	
	1916	43,361	574,700	12.43	
	1915	41,243	569,762	13.57	
	1914	41,656	207,115	4.97	
	1913	96,445	579,653	8.29	
	1912	112,776	1,196,416	10.60	
	1911	16,549	153,908	9.30	

SUMMARY OF THE ACREAGE AND YIELDS OF THE LEADING GRAINS
DURING THE LAST TEN YEARS.—(Continued).

	Year	Crop Area in Acres	Total Yield in Bushels	Yield per Acre	Average Yield
Rye	1920	160,959	3,419,969	21.25	19.45
	1919	83,032	1,173,256	14.13	
	1918	47,877	825,875	17.50	
	1917	29,997	764,828	26.00	
	1916	10,134	212,503	23.25	
	1915	12,067	291,399	24.14	
	1914	14,623	261,843	17.90	
	1913	17,452	370,661	21.24	
	1912	2,493	54,119	21.70	
	1911	2,190	38,722	17.68	
Mixed Grains	1920	8,398	258,238	Tons 30.75	
	1919	26,000	942,500	36.25	
Hay	1919	433,296	476,626	1.10	
	1920	403,333	524,462	1.30	

	Total Crop Area	Total Yield of Grain
1920	7,916,482	215,648,744
1919	5,765,791	113,199,818
1918	6,355,843	93,275,863
1917	5,974,098	150,082,489
1916	3,821,476	111,735,729
1915	3,668,238	164,332,483
1914	2,586,169	58,895,709
1913	2,799,267	75,575,682
1912	2,391,752	64,465,058
1911	1,732,648	50,907,531

SPRING WHEAT.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	262,400	110,970	2.36
		1920	1,679,360	217,296	7.73
2	Warner	1919	1,197,200	263,998	4.71
		1920	1,941,760	164,984	11.77
3	Cardston	1919	111,700	23,692	4.71
		1920	1,653,120	65,390	25.28
4	Pincher Creek	1919	31,160	5,856	5.32
		1920	385,728	18,309	21.07
5	Macleod	1919	45,920	8,631	5.32
		1920	425,088	39,837	10.67
6	Claresholm	1919	393,600	40,072	9.83
		1920	2,151,680	104,624	20.56
7	Nanton	1919	557,600	84,400	6.60
		1920	2,440,320	102,612	23.78
8	Little Bow	1919	385,400	92,475	4.17
		1920	4,985,600	273,632	18.22
9	Taber	1919	623,200	93,708	6.65
		1920	3,988,480	261,560	15.25
10	Redcliff	1919	485,800	123,300	3.93
		1920	2,151,680	217,296	9.90
11	Bow Valley	1919	1,836,800	129,165	14.18
		1920	3,831,040	166,996	22.94
12	Gleichen	1919	3,936,000	209,610	18.77
		1920	5,589,120	199,188	28.06
13	High River	1919	508,400	53,019	9.59
		1920	2,046,720	76,657	26.70
14	Okotoks	1919	100,860	11,837	8.52
		1920	461,824	14,084	32.79
15	Rocky Mountain	1919	4,100	764	5.36
		1920	106,112	4,738	22.39
16	Calgary	1919	185,320	14,796	12.52
		1920	96,448	2,776	34.74
17	Cochrane	1919	41,000	5,179	7.91
		1920	259,776	7,746	33.54
18	Didsbury	1919	1,820,400	69,665	26.13
		1920	1,750,402	71,039	24.64
19	Hand Hills	1919	4,316,000	295,920	14.69
		1920	7,216,000	366,184	19.71
20	Acadia	1919	1,361,200	246,600	5.52
		1920	6,140,160	390,328	15.73
21	Coronation	1919	1,831,880	183,717	9.97
		1920	4,434,560	241,440	18.37
22	Stettler	1919	2,460,000	104,805	23.47
		1920	3,463,680	142,852	24.24
23	Olds	1919	1,041,400	28,359	36.72
		1920	847,552	32,192	26.33
24	Innisfail	1919	152,520	4,315	35.34
		1920	251,904	8,571	29.39
25	Red Deer	1919	328,000	11,097	29.55
		1920	380,480	13,782	27.60
26	Lacombe	1919	680,600	22,440	30.33
		1920	918,400	38,228	24.02
27	Ponoka	1919	295,200	8,877	33.25
		1920	440,832	17,403	25.33
28	Wetaskiwin	1919	206,640	5,585	36.99
		1920	223,040	9,456	23.59

SPRING WHEAT.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
29	Camrose	1919	918,400	45,004	20.40
		1920	1,338,240	44,264	30.23
30	Sedgewick	1919	1,623,600	131,931	12.30
		1920	5,300,480	164,984	32.13
31	Ribstone	1919	1,262,800	144,261	8.75
		1920	4,303,360	183,092	23.50
32	Wainwright	1919	442,800	57,951	7.64
		1920	1,941,760	73,438	26.44
33	Alexandra	1919	89,380	9,556	9.35
		1920	760,960	21,327	35.68
34	Vermilion	1919	173,840	22,810	7.62
		1920	1,115,200	32,594	34.22
35	Vegreville	1919	483,800	33,291	14.53
		1920	1,364,480	37,020	36.86
36	South Edmonton	1919	375,068	12,330	30.41
		1920	461,824	12,876	35.86
37	Leduc	1919	213,200	7,768	27.45
		1920	262,400	8,450	31.05
38	Stony Plain	1919	201,720	6,781	29.75
		1920	320,128	10,060	31.82
39	Edson	1919	19,352	1,332	14.53
		1920	1,220	102	11.96
40	Lac Ste. Anne	1919	34,112	3,699	9.22
		1920	66,125	2,555	25.88
41	Pembina	1919	173,840	7,028	24.73
		1920	278,144	10,663	26.06
42	St. Albert	1919	118,080	3,699	31.92
		1920	346,368	7,645	45.30
43	Sturgeon	1919	352,600	10,172	34.66
		1920	404,096	12,675	31.88
44	Victoria	1919	508,400	16,769	30.31
		1920	997,120	26,759	37.26
45	Whitford	1919	377,200	17,015	22.16
		1920	802,944	27,765	28.92
46	Beaver River	1919	70,520	3,748	18.81
		1920	212,544	7,485	28.39
47	St. Paul	1919	60,188	3,514	17.13
		1920	249,280	7,485	33.30
48	Clearwater	1919	6,018	167	36.03
		1920	10,496	402	26.11
49	Athabasca	1919	37,720	1,073	35.15
		1920	190,240	7,364	25.83
50	Grouard	1919	11,480	443	25.91
		1920	5,248	332	15.80
51	Peace River	1919	1,066,000	34,524	30.88
		1920	1,495,680	49,294	30.34
52	Lethbridge	1919	56,580	10,974	5.15
		1920	233,535	17,172	13.62
Total		1919	33,904,999	2,829,052	12.51
		1920	82,712,738	4,035,003	20.50

WINTER WHEAT.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	.....	.....	.....
		1920	.....	.....	.....
2	Warner	1919	120	24	5.00
		1920	6,474	716	9.01
3	Cardston	1919	4,911	325	15.11
		1920	17,505	843	20.76
4	Pincher Creek	1919	42,408	5,472	7.75
		1920	66,544	3,460	19.23
5	Macleod	1919	1,286	200	6.43
		1920	851	42	20.26
6	Claresholm	1919	82,080	4,569	18.00
		1920	4,232	154	27.48
7	Nanton	1919	43,320	2,280	19.09
		1920	51,940	2,768	18.76
8	Little Bow	1919	440	22	20.00
		1920	1,007	51	19.75
9	Taber	1919	819	46	18.00
		1920	6,894	346	19.92
10	Redcliff	1919	2,023	114	17.75
		1920	24,699	2,549	9.69
11	Bow Valley	1919	58,066	3,591	16.17
		1920	95,920	4,826	19.65
12	Gleichen	1919	19,380	1,140	17.00
		1920	28,776	1,457	19.75
13	High River	1919	1,995	114	17.50
		1920	2,398	121	19.81
14	Okotoks	1919	30,770	1,710	18.00
		1920	47,960	2,428	19.75
15	Rocky Mountain	1919	34,200	2,280	15.00
		1920	10,858	791	13.73
16	Calgary	1919	2,850	285	10.00
		1920	959	49	19.57
17	Cochrane	1919	1,224	102	12.00
		1920	4,676	236	19.81
18	Didsbury	1919	2,280	114	20.00
		1920	1,079	61	17.69
19	Hand Hills	1919	13,710	540	25.39
		1920	22,061	1,117	19.75
20	Acadia	1919	21,850	1,140	19.00
		1920	9,112	825	11.04
21	Coronation	1919	66,690	3,420	19.50
		1920	95,920	4,856	19.75
22	Stettler	1919	18,282	1,071	17.07
		1920	1,151	52	22.13
23	Olds	1919	22,127	1,140	19.41
		1920	65,345	3,308	19.75
24	Innisfail	1919	3,078	171	18.00
		1920	4,796	243	19.73
25	Red Deer	1919	5,557	285	19.50
		1920	755	37	20.40
26	Lacombe	1919	47,153	2,166	21.77
		1920	7,194	364	19.76
27	Ponoka	1919	6,840	342	20.00
		1920	8,393	425	19.74
28	Wetaskiwin	1919	5,415	295	19.00
		1920	143	7	20.43
29	Camrose	1919	8,798	399	22.05
		1920	2,456	76	32.34

WINTER WHEAT.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
30	Sedgewick	1919	8,476	473	17.92
		1920	21,222	983	21.59
31	Ribstone	1919	22,276	1,322	16.85
		1920	2,817	148	17.83
32	Wainwright	1919	1,995	114	17.50
		1920	3,417	172	19.87
33	Alexandra	1919	1,360	85	16.00
		1920	2,398	121	19.81
34	Vermilion	1919	3,078	171	18.00
		1920	4,796	243	19.74
35	Vegreville	1919	3,040	136	15.00
		1920	5,203	172	30.25
36	South Edmonton	1919	1,710	114	15.00
		1920	20,503	613	33.45
37	Leduc	1919	2,016	112	18.00
		1920	4,796	243	19.73
38	Stony Plain	1919	3,249	171	19.00
		1920	2,398	121	19.81
39	Edson	1919	.....	.....	.....
		1920	.....	.....	.....
40	Lac Ste. Anne	1919	2,919	114	25.60
		1920	6,235	315	19.79
41	Pembina	1919	3,420	171	20.00
		1920	4,796	243	19.73
42	St. Albert	1919	3,930	131	30.00
		1920	707	36	19.64
43	Sturgeon	1919	1,606	114	14.09
		1920	4,316	218	19.79
44	Victoria	1919	9,234	513	18.00
		1920	917	33	27.79
45	Whitford	1919	1,802	102	17.50
		1920	671	34	19.73
46	Beaver River	1919	2,972	171	17.38
		1920	11,270	570	19.77
47	St. Paul	1919	2,556	142	18.00
		1920	3,357	170	19.75
48	Clearwater	1919	.....	.....	.....
		1920	.....	.....	.....
49	Athabasca	1919	3,180	233	13.65
		1920	7,194	364	19.76
50	Grouard	1919	2,443	114	21.43
		1920	557	14	39.79
51	Peace River	1919	2,667	114	23.40
		1920	15,107	929	16.26
52	Lethbridge	1919	.....	.....	.....
		1920	.....	.....	.....
	Total	1919	630,582	37,953	16.62
		1920	712,777	37,990	18.76

OATS.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	60,237	8,781	6.86
		1920	173,376	14,637	11.84
2	Warner	1919	4,492	1,972	2.40
		1920	173,376	10,987	15.79
3	Cardston	1919	29,461	1,702	17.31
		1920	516,000	14,637	35.25
4	Pincher Creek	1919	14,545	1,972	7.77
		1920	270,384	8,487	31.86
5	Macleod	1919	3,533	216	16.36
		1920	113,520	5,844	19.42
6	Claresholm	1919	17,858	1,525	11.71
		1920	408,672	15,857	25.77
7	Nanton	1919	43,842	3,744	11.71
		1920	897,840	26,022	34.50
8	Little Bow	1919	45,972	2,895	15.88
		1920	970,080	30,291	32.02
9	Taber	1919	125,170	6,755	15.88
		1920	451,080	20,736	21.89
10	Redcliff	1919	85,692	14,282	6.00
		1920	185,760	19,110	9.72
11	Bow Valley	1919	253,551	7,816	32.44
		1920	879,264	29,885	29.42
12	Gleichen	1919	2,705,377	101,325	26.70
		1920	5,490,240	144,343	38.03
13	High River	1919	272,883	20,721	13.17
		1920	4,561,440	96,567	47.24
14	Okotoks	1919	131,435	7,913	16.61
		1920	1,589,280	37,000	42.95
15	Rocky Mountain	1919	1,070	193	5.54
		1920	101,117	3,639	27.79
16	Calgary	1919	278,981	13,510	20.65
		1920	1,736,500	37,561	46.23
17	Cochrane	1919	136,117	7,430	18.32
		1920	1,754,400	39,236	44.71
18	Didsbury	1919	2,821,467	106,150	26.58
		1920	5,177,486	125,781	41.16
19	Hand Hills	1919	2,192,094	86,850	25.54
		1920	2,745,120	97,990	28.02
20	Acadia	1919	278,036	27,020	10.29
		1920	1,300,320	62,006	20.97
21	Coronation	1919	2,206,068	123,520	17.86
		1920	3,261,120	127,265	25.62
22	Stettler	1919	3,442,290	113,870	30.23
		1920	4,045,440	135,194	29.92
23	Olds	1919	1,797,216	57,900	31.04
		1920	2,992,800	83,353	35.90
24	Innisfail	1919	2,154,574	40,530	53.16
		1920	2,146,560	53,264	40.30
25	Red Deer	1919	1,671,225	42,460	39.36
		1920	1,506,720	47,160	31.95
26	Lacombe	1919	2,661,084	69,480	38.30
		1920	2,703,840	97,584	27.70
27	Ponoka	1919	1,933,629	35,700	55.66
		1920	1,692,480	58,957	28.70
28	Wetaskiwin	1919	2,219,963	50,180	44.24
		1920	2,064,000	69,122	29.86
29	Camrose	1919	6,461,987	220,020	29.37
		1920	8,565,600	231,762	36.96

OATS.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
30	Sedgewick	1919	2,754,689	135,100	20.39
		1920	6,088,800	146,376	42.59
31	Ribstone	1919	1,263,214	76,235	16.57
		1920	2,683,200	81,320	32.99
32	Wainwright	1919	830,575	55,005	15.10
		1920	2,951,520	75,221	39.24
33	Alexandra	1919	805,192	35,898	22.43
		1920	3,302,400	69,122	47.78
34	Vermilion	1919	754,518	42,846	17.61
		1920	3,508,800	68,715	51.06
35	Vegreville	1919	3,873,046	162,120	23.89
		1920	8,049,600	162,640	49.49
36	South Edmonton	1919	1,881,692	52,100	36.11
		1920	2,683,200	65,056	41.24
37	Leduc	1919	1,570,062	44,390	35.39
		1920	1,775,040	52,858	33.58
38	Stony Plain	1919	1,029,968	31,459	32.74
		1920	1,671,840	44,726	37.37
39	Edson	1919	53,710	2,065	26.01
		1920	60,557	2,519	24.04
40	Lac Ste. Anne	1919	963,147	30,880	31.19
		1920	1,434,480	43,099	33.28
41	Pembina	1919	1,403,168	44,390	31.61
		1920	2,064,000	56,415	36.59
42	St. Albert	1919	1,371,323	39,565	34.66
		1920	2,270,400	51,841	43.80
43	Sturgeon	1919	3,343,050	94,570	35.35
		1920	4,004,160	96,567	41.47
44	Victoria	1919	2,312,294	75,270	30.72
		1920	3,281,760	75,221	43.63
45	Whitford	1919	1,571,136	59,830	26.26
		1920	2,105,280	65,462	32.16
46	Beaver River	1919	600,863	27,792	21.62
		1920	959,760	31,308	30.65
47	St. Paul	1919	438,500	22,002	19.93
		1920	908,160	22,769	39.89
48	Clearwater	1919	20,787	650	31.98
		1920	42,004	1,321	32.48
49	Athabasca	1919	308,798	9,958	31.01
		1920	1,238,400	39,440	31.40
50	Grouard	1919	204,230	4,053	50.39
		1920	1,145,520	25,616	44.72
51	Peace River	1919	4,017,295	96,500	41.63
		1920	4,334,400	107,749	40.22
52	Lethbridge	1919	12,146	733	16.37
		1920	38,245	2,572	14.87
Total		1919	65,434,252	2,318,792	28.22
		1920	115,079,241	3,089,757	37.25

BARLEY.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	4,250	548	7.76
		1920	12,828	861	14.90
2	Warner	1919	1,160	146	7.94
		1920	6,037	898	6.72
3	Cardston	1919	16,146	925	17.45
		1920	114,268	4,953	23.07
4	Pincher Creek	1919	1,325	287	4.62
		1920	25,656	1,159	22.13
5	Macleod	1919	2,760	243	11.36
		1920	20,159	1,410	14.29
6	Claresholm	1919	5,590	430	13.00
		1920	39,455	1,776	22.22
7	Nanton	1919	2,898	510	5.69
		1920	30,615	1,410	21.71
8	Little Bow	1919	4,968	680	7.31
		1920	54,439	3,470	15.69
9	Taber	1919	3,864	571	6.77
		1920	44,737	2,215	20.19
10	Redcliff	1919	2,881	746	3.86
		1920	2,781	484	5.74
11	Bow Valley	1919	89,148	2,255	39.88
		1920	62,093	3,093	20.07
12	Gleichen	1919	543,720	29,403	18.49
		1920	500,192	21,736	23.01
13	High River	1919	42,310	3,548	11.92
		1920	398,860	15,257	26.14
14	Okotoks	1919	38,618	2,970	13.00
		1920	200,508	5,266	38.07
15	Rocky Mountain	1919	.....	.....	.....
		1920	9,236	514	17.97
16	Calgary	1919	76,135	5,225	14.57
		1920	133,611	4,790	27.89
17	Cochrane	1919	55,435	4,739	11.69
		1920	409,640	12,958	31.61
18	Didsbury	1919	489,963	27,459	17.84
		1920	774,172	28,570	27.10
19	Handhills	1919	156,003	5,224	29.86
		1920	127,984	6,395	21.58
20	Acadia	1919	8,746	1,003	8.71
		1920	32,124	2,319	13.85
21	Coronation	1919	102,274	5,832	17.53
		1920	120,736	6,635	18.20
22	Stettler	1919	273,450	11,421	23.95
		1920	194,040	10,763	18.02
23	Olds	1919	249,095	8,748	28.47
		1920	355,740	11,913	29.86
24	Innisfail	1919	252,595	7,776	32.49
		1920	215,600	7,628	28.26
25	Red Deer	1919	296,421	8,383	35.03
		1920	297,528	10,868	27.37
26	Lacombe	1919	830,950	25,029	35.36
		1920	547,624	28,633	19.12
27	Ponoka	1919	417,555	11,543	36.17
		1920	336,336	18,183	18.49
28	Wetaskiwin	1919	547,343	14,459	37.85
		1920	398,860	17,033	23.42
29	Camrose	1919	600,825	25,272	24.08
		1920	485,100	19,855	24.43

BARLEY.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
30	Sedgewick	1919	207,930	12,757	16.30
		1920	394,548	14,212	27.76
31	Ribstone	1919	61,788	5,467	11.31
		1920	116,424	4,849	24.01
22	Wainwright	1919	35,182	3,013	11.68
		1920	85,162	3,072	27.72
33	Alexandra	1919	123,390	10,630	11.60
		1920	130,438	4,284	30.45
24	Vermilion	1919	47,105	3,548	13.28
		1920	209,132	6,228	33.58
35	Vegreville	1919	321,131	15,552	20.65
		1920	463,540	14,734	31.46
36	South Edmonton	1919	681,458	23,085	29.52
		1920	754,600	21,318	35.39
37	Leduc	1919	392,060	11,907	32.93
		1920	336,336	12,017	27.99
38	Stony Plain	1919	708,423	25,515	27.77
		1920	797,720	28,633	27.86
39	Edson	1919	62,928	2,770	22.72
		1920	1,703	63	27.03
40	Lac Ste. Anne	1919	154,339	5,832	26.47
		1920	185,416	6,980	26.56
41	Pembina	1919	232,723	8,262	28.16
		1920	181,104	8,005	22.62
42	St. Albert	1919	516,125	15,917	32.42
		1920	679,140	20,064	33.85
43	Sturgeon	1919	662,979	21,019	31.54
		1920	749,210	24,453	30.64
44	Victoria	1919	627,469	25,272	24.83
		1920	819,280	25,498	32.13
45	Whitford	1919	288,420	11,542	24.99..
		1920	284,592	10,659	26.70
46	Beaver River	1919	42,838	2,017	21.23
		1920	83,006	3,511	23.64
47	St. Paul	1919	9,207	583	15.79
		1920	47,432	1,509	31.43
48	Clearwater	1919	8,609	243	35.43
		1920	18,561	507	36.69
49	Athabasca	1919	49,699	1,750	29.39
		1920	35,358	1,818	19.45
50	Grouard	1919	22,050	583	37.82
		1920	74,382	2,278	32.65
51	Peace River	1919	249,888	8,991	27.79
		1920	323,400	14,421	22.42
52	Lethbridge	1919	4,002	243	16.47
		1920	8,628	508	16.99
	Total	1919	10,562,442	414,098	25.50
		1920	12,740,071	480,666	26.50

RYE.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	19,190	1,389	13.81
		1920	10,922	1,164	9.38
2	Warner	1919	14,347	3,939	3.65
		1920	109,225	8,553	12.77
3	Cardston	1919	.....	.....	.....
		1920	52,942	2,376	22.28
4	Pincher Creek	1919	3,201	516	6.20
		1920	20,560	1,401	14.67
5	Macleod	1919	2,586	496	5.21
		1920	1,850	133	13.91
6	Claresholm	1919	7,797	873	8.93
		1920	55,255	3,350	16.49
7	Nanton	1919	31,032	1,925	16.12
		1920	79,027	3,231	24.46
8	Little Bow	1919	15,998	3,732	4.28
		1920	354,660	19,720	17.98
9	Taber	1919	43,743	8,932	4.89
		1920	462,600	21,384	21.63
10	Redcliff	1919	2,626	492	5.33
		1920	25,700	1,188	21.63
11	Bow Valley	1919	14,609	933	15.66
		1920	53,980	2,376	22.71
12	Gleichen	1919	54,525	4,843	11.26
		1920	257,000	11,880	21.63
13	High River	1919	39,587	5,161	7.67
		1920	367,510	12,355	29.74
14	Okotoks	1919	13,463	953	14.12
		1920	86,095	3,273	26.26
15	Rocky Mountain	1919	126	87	14.12
		1920	5,333	256	20.83
16	Calgary	1919	27,325	1,727	15.83
		1920	102,460	3,659	28.00
17	Cochrane	1919	96,232	9,528	10.09
		1920	264,710	9,028	29.32
18	Didsbury	1919	165,030	7,042	23.43
		1920	40,394	1,747	23.12
19	Handhills	1919	9,393	493	19.05
		1920	61,680	5,108	12.07
20	Acadia	1919	24,538	1,628	15.07
		1920	25,186	2,685	9.28
21	Coronation	1919	5,030	516	9.75
		1920	34,438	2,779	12.39
22	Stettler	1919	44,016	2,144	20.53
		1920	40,349	1,924	20.97
23	Olds	1919	47,197	1,925	24.52
		1920	101,515	4,799	21.15
24	Innisfail	1919	42,127	1,322	31.96
		1920	22,744	963	25.19
25	Red Deer	1919	23,295	754	30.89
		1920	17,347	819	20.18
26	Lacombe	1919	75,366	2,580	29.21
		1920	75,815	4,277	17.72
27	Ponoka	1919	85,946	2,461	34.92
		1920	57,825	3,089	18.71
28	Wetaskiwin	1919	53,510	1,588	33.69
		1920	26,728	1,116	23.95
29	Camrose	1919	63,615	3,870	16.44
		1920	52,042	2,471	21.06

Rye.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
30	Sedgewick	1919	18,331	1,528	11.99
		1920	69,390	2,732	25.40
31	Ribstone	1919	15,953	1,759	9.07
		1920	68,105	2,946	23.11
32	Wainwright	1919	31,214	4,009	7.79
		1920	43,690	2,780	15.71
33	Alexandra	1919	12,337	548	22.51
		1920	20,313	1,033	19.65
34	Vermilion	1919	3,030	397	7.63
		1920	33,924	1,615	21.00
35	Vegreville	1919	22,569	1,509	14.95
		1920	25,443	915	27.80
36	South Edmonton	1919	5,933	302	19.65
		1920	5,286	285	18.48
37	Leduc	1919	24,830	1,032	24.06
		1920	5,525	280	19.73
38	Stony Plain	1919	28,270	1,128	25.06
		1920	15,837	556	28.49
39	Edson	1919	6,792	548	12.39
		1920	1,233	121	10.19
40	Lac Ste. Anne	1919	10,721	508	21.10
		1920	7,903	295	26.79
41	Pembina	1919	17,316	722	23.98
		1920	10,151	437	23.23
42	St. Albert	1919	15,175	572	26.53
		1920	2,338	78	29.97
43	Sturgeon	1919	28,245	834	33.87
		1920	22,744	879	25.87
44	Victoria	1919	5,383	278	19.36
		1920	5,589	280	19.96
45	Whitford	1919	9,241	397	23.28
		1920	8,995	487	18.47
46	Beaver River	1919	3,899	198	19.69
		1920	8,545	361	23.67
47	St. Paul	1919	7,090	595	11.92
		1920	10,794	560	19.27
48	Clearwater	1919	.....	.....	.....
		1920	3,695	161	22.95
49	Athabasca	1919	1,455	105	13.85
		1920	3,695	161	22.95
50	Grouard	1919	12,544	337	37.22
		1920	1,043	47	22.19
51	Peace River	1919	8,635	226	38.20
		1920	40,092	915	43.81
52	Lethbridge	1919	.....	.....	.....
		1920	2,716	119	22.82
Total		1919	1,183,863	83,829	14.13
		1920	3,419,969	160,959	21.25

FLAX.

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
1	Medicine Hat	1919	5,108	2,952	1.73
		1920	37,927	9,318	4.07
2	Warner	1919	699	466	1.50
		1920	49,014	12,364	3.96
3	Cardston	1919	4,590	2,295	2.00
		1920	27,813	3,369	8.25
4	Pincher Creek	1919	765	155	4.92
		1920	6,126	985	6.22
5	Macleod	1919	918	187	4.90
		1920	2,373	272	8.72
6	Claresholm	1919	15,300	3,825	4.00
		1920	6,710	1,021	6.57
7	Nanton	1919	4,590	933	4.92
		1920	642	81	7.93
8	Little Bow	1919	1,330	605	2.20
		1920	10,703	2,235	4.79
9	Taber	1919	9,723	3,136	3.10
		1920	122,535	16,128	7.59
10	Redcliff	1919	19,253	6,731	2.86
		1920	95,305	12,544	7.59
11	Bow Valley	1919	5,618	611	9.18
		1920	9,530	1,254	7.60
12	Gleichen	1919	21,046	2,065	10.19
		1920	27,230	3,584	7.59
13	High River	1919	15,300	3,060	5.00
		1920	1,485	290	5.03
14	Okotoks	1919	6,120	1,236	4.95
		1920	1,692	577	2.93
15	Rocky Mountain	1919	612	124	4.93
		1920	299	41	7.29
16	Calgary	1919	599	122	4.89
		1920	2,042	269	7.59
17	Cochrane	1919	459	93	4.90
		1920	185	11	16.81
18	Didsbury	1919	1,253	179	7.00
		1920	7,457	910	8.19
19	Hand Hills	1919	13,023	2,142	6.08
		1920	38,900	6,989	5.56
20	Acadia	1919	42,075	7,650	5.50
		1920	85,580	15,411	5.55
21	Coronation	1919	5,069	803	6.31
		1920	10,697	2,078	5.15
22	Stettler	1919	4,573	780	5.86
		1920	8,850	1,147	7.71
23	Olds	1919	5,875	918	6.40
		1920	85,094	3,942	21.58
24	Innisfail	1919	1,530	312	4.90
		1920	6,710	878	7.64
25	Red Deer	1919	75	15	5.00
		1920	369	27	13.66
26	Lacombe	1919	1,530	309	4.95
		1920	1,556	61	25.55
27	Ponoka	1919	70	14	5.00
		1920	58	8	7.25
28	Wetaskiwin	1919	2,290	229	10.00
		1920	4,084	537	7.60
29	Camrose	1919	3,947	555	7.11
		1920	5,251	511	10.27

FLAX.—(Continued).

No.	Crop District	Year	Bushels	Acreage	Yield per Acre
30	Sedgewick	1919	1,002	101	9.93
		1920	4,940	279	17.70
31	Ribstone	1919	3,793	696	5.45
		1920	17,116	2,078	8.23
32	Wainwright	1919	5,239	826	6.34
		1920	9,141	1,111	8.22
33	Alexandra	1919	1,530	310	4.93
		1920	5,251	371	14.15
34	Vermilion	1919	765	156	4.90
		1920	494	52	9.50
35	Vegreville	1919	496	180	2.75
		1920	3,929	152	25.85
36	South Edmonton	1919	669	61	10.93
		1920	116	7	16.57
37	Leduc	1919	1,530	306	5.00
		1920	358	27	13.26
38	Stony Plain	1919	1,683	153	11.00
		1920	768	64	12.00
39	Edson	1919	.....	.....	.....
		1920	.....	.....	.....
40	Lac Ste. Anne	1919	688	115	6.00
		1920	4,045	534	7.57
41	Pembina	1919	382	30	12.50
		1920	846	82	10.31
42	St. Albert	1919	153	17	9.00
		1920	3,248	430	7.55
43	Sturgeon	1919	650	149	4.35
		1920	1,420	71	20.00
44	Victoria	1919	612	124	4.92
		1920	292	36	8.11
45	Whitford	1919	152	38	4.00
		1920	6,807	367	18.55
46	Beaver River	1919	184	46	4.00
		1920	1,867	247	7.55
47	St. Paul	1919	153	31	4.95
		1920	105	11	9.54
48	Clearwater	1919	230	46	5.00
		1920	58	7	8.28
49	Athabasca	1919	1,647	183	9.00
		1920	58	7	8.28
50	Grouard	1919	248	31	8.00
		1920	422	55	7.67
51	Peace River	1919	5,113	535	9.55
		1920	2,217	157	14.12
52	Lethbridge	1919	1,928	535	3.60
		1920	6,222	702	8.86
	Total	1919	222,192	47,171	4.71
		1920	725,910	103,689	7.00

REPORT OF THE RECORDER OF BRANDS

SIR,—I have the honour to submit the following report on the work of this branch of your department for the year 1920.

During the year 1,363 horse and 2,133 cattle brands were allotted and recorded to their respective owners, while 514 transfers and 30 changes were duly registered. Certified extracts of brands numbered 33, while searches and strays numbered 1911, being a total of 5,984 transactions.

Compared with last year (1919) these transactions show a decrease of 716 horse brands, 1,032 cattle brands, 58 transfers, 16 changes and 194 searches and strays, while the certified extracts give an increase of 13.

The following table shows the different transactions which have taken place since separate records for the province have been kept:

Year	Horse	Cattle	Trans.	Changes	Extracts, Searches & Strays
1906	1,361	1,894	384	38	73
1907	1,030	1,230	430	28	73
1908	1,103	1,225	421	29	292
1909	1,308	1,326	430	33	783
1910	1,891	1,672	524	34	1,218
1911	1,538	1,280	362	32	1,408
1912	1,545	1,542	374	16	1,655
1913	1,471	2,059	419	11	1,795
1914	1,964	2,629	395	18	1,932
1915	1,350	1,899	743	27	1,572
1916	1,503	2,833	462	28	801
1917	1,839	3,370	531	33	673
1918	2,161	3,455	617	40	985
1919	2,079	3,165	572	46	2,125
1920	1,363	2,133	514	30	1,911
Aver. 15 years	1,567	2,114	479	30	1,142

The number of applications for new brands during the past year has been the smallest since 1915, and is, undoubtedly, due to the want of good grazing during the years 1919 and 1920. The want of feed during the past two winters and the extraordinary prices asked for feed during these periods, have made it necessary in many cases, especially in the southern part of the province, to dispose of stock. In many cases, the cost of winter feed alone was equal to the market value of the animals during the spring and summer months. The cost too, for ordinary labor, during the spring and summer months has been very heavy, while the harvesting expenses have been extremely so, and, in consequence, little or no surplus has been available for the purchase of stock and hence the demand for new brands has been very slight.

The number of animals reported as strays is again very heavy and amounts to 1911 head, and may be accounted for by the fact that grazing was not plentiful during the months of January, February and March,

and again during the fall and early winter months of October, November and December. This made farmers and ranchers anxious to have as few strays round their districts as possible in order to conserve the grazing, and, consequently, every one reported so as to have them removed. Another cause is the application of The Domestic Animals Act to the unorganized territory which has been administered by the Department and which has greatly simplified the procedure affecting stray animals and the reporting of brands. Reports of these are now more carefully made and regularly forwarded to this office.

Judging from reports of stray animals, sent to this office during the past two years, it is very apparent that a number of stock owners are using unrecorded brands. It should be borne in mind that although a man has a brand recorded for horses, that does not give him any right to use it on cattle without having it recorded for that class of stock. If they do so, then any stray will be reported as not bearing a recorded brand, and the animal will be lost to the owner. Not only so, but the party placing the brand on the animal, lays himself open to a fine of \$200.00.

The following statement shows the number of renewals and re-issues of brands to old owners, issued since this was instituted in 1915:

	1915	1916	1917	1918	1919	1920
Renewed 1915	7,805					
Renewed 1916		2,869				
Re-issue 1916	510					
Renewed 1917		519	4,169			
Re-issue 1917	431	120				
Renewed 1918			949	3,981		
Re-issue 1918	247	95	199			
Renewed 1919				1,069	6,808	
Re-issue 1919	87	76	120	34		
Renewed 1920					1,468	3,719
Re-issue 1920		11	69	55		
Totals	9,080	3,690	5,506	5,139	8,276	3,719

The number of applications for renewal, in keeping with the number of new applicants for brands, has also fallen below the estimated number, and can only be accounted for by the poor grazing and severe winter.

The manuscript for a new supplement to the brand book for the years 1919 and 1920 is being prepared. The book will contain all new brands issued for the first time during these years, and also all renewals, transfers and changes. It will contain approximately about 22,000 designs, and should be ready for publication about the month of April.

Owing to the large number of cancelled brands, thrown open for allotment during the years 1919 and 1920, it will not be necessary to call a meeting of the brand commissioners.

The number of documents received during the year was 12,470, while the number of documents despatched was 38,534, making a total of 51,004.

Yours obediently,

JAS. WILSON,

Recorder of Brands.

REPORT OF CHIEF GAME AND FIRE GUARDIAN

SIR,—I have the honor to submit herewith my fifteenth annual report in connection with the enforcement of The Game Act and The Prairie Fires Ordinance for the year 1920:

REVENUE

It is a satisfaction to be able to state that this branch of your department again shows a substantial surplus over and above the expenditure. The revenue from all sources provided for by The Game Act is \$17,832.46. The expenditure was \$30,430.11, leaving a surplus of \$17,402.35. The above total shows the sum of \$2,149.41 as being derived from the collection of the tax on furs. Resident Fur Dealers' Licenses gave a revenue of \$1,460.00, Non-Resident Fur Buyers, \$100.00 and Resident Fur Buyers, \$160,000. As the amendment to The Game Act did not become effective in time to cover transactions in fur during April and May, and as many buyers and dealers did not engage in the trafficking of pelts of wild animals during November and December, there were not as many licenses sold nor as much tax collected as was anticipated.

GAME BIRDS

The nesting season for game birds was favorable and with fewer spring fires and a reduced number of prairie wolves, game birds, especially prairie chicken, partridge and Hungarian partridge show an increase in numbers. The season of 1920 being again dryer than usual and the rain-fall less than in normal years resulted in the drying up of a number of sloughs and some lakes, with the result that the breeding grounds were limited in extent and, consequently, there was an apparent decrease in the supply of water fowl. On account of conditions these birds frequented the larger bodies of water and in such districts were found equally as plentiful as in former years.

BIG GAME

Below is a statement showing the number of big game animals killed each year from 1907 to 1920:

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Antelope	49	45	89	126	101	105	119	..	..	..	..	..	..	..
Moose	14	37	86	184	305	425	865	1335	1116	849	1026	900	974	1080
Caribou .....	..	..	5	8	30	40	56	78	34	28	43	45	52	55
Mountain Sheep..	..	..	40	54	49	90	65	78	110	83	57	76	77	76
Mountain Goat...	..	..	38	46	56	58	42	61	40	26	37	43	33	35
Elk .....	..	..	..	7	..	..	..	..	1	..	..	..	..	..
Deer	59	125	299	540	619	768	908	1388	692	560	705	828	851	1047

FUR-BEARING ANIMALS

As in 1919 in that part of the province lying to the south of the 55th parallel, permits were issued to the owners or occupants of land to trap beaver, where these animals were causing damage or inconvenience, and as the regulations require that all pelts taken under permit shall be forwarded to this department to be sold, there were received 1,363 pelts

taken under 312 permits. The greater number of these pelts were sold during the month of November and realized an average of \$9.81 per pelt. A regrettable feature was that a very much less amount was secured from the sale of the pelts than otherwise would have been the case if they had been forwarded to this department one month earlier. The great bulk of the beaver skins were not received by this department until the latter part of May, and by this time the fur dealers of the continent had become panic stricken on account of the serious slump in the market for all pelts of wild animals. This was due to the fact that millions of skins had been stored in St. Louis, New York and other points and held at abnormal prices. It was expected that these skins would be thrown on the market, and if such had occurred, prices would have dropped to approximately 75 per cent. of the values prevailing before the war. With the prices prevailing for the pelts of fur-bearing animals up to May 1st, trappers who were fortunate enough to sell before that date received handsome returns for their efforts during the winter. Those who held their spring catch of muskrats until December realized better prices than prevailed prior to 1914. At the opening of the season of 1920 and 1921, on November 1st, very few of the fur dealers of previous years were prepared to purchase pelts of wild animals. The market at that time was an unknown quantity, but at the close of the year things were looking much brighter in this business and exceptionally good prices will be realized on this season's catch by those who have held back and not sold. The unsettled conditions have resulted in fewer buyers and dealers engaging in the purchasing of furs than in former years, and owing to the fact that legislation now requires all dealers and buyers to obtain a license before trafficking in the pelts of wild animals, it is believed that the fur trade will gradually be established on a better basis. Reports and returns are required from licensed dealers, which will assist the department in forming some idea as to the extent of the trade. With this information it will be possible to frame legislation, which will result in the proper protection of the fur-bearers and the discouraging of trapping during the season when the pelts are of little or no value.

TAX ON FURS

Since the formation of the province on the first of September, 1905, there has been expended for the protection of big game, game birds and fur-bearing animals the sum of \$259,677.52. The revenue derived from licenses, permits, etc., was contributed almost entirely by farmers and sportsmen for the privilege of hunting big game and game birds. But during this time the fur dealer, fur buyer and trapper have contributed nothing to cover the expenditure made for the protection of the fur bearers. Fortunes have been made by fur dealers during this time by trafficking in the pelts of wild animals, and non-resident trappers from other provinces and states of the Union to the south have reaped large profits from their trapping operations in Alberta. They have invariably taken all skins trapped by them outside of the province and sold them in outside markets. During the time they were trapping, they secured their meat supply by killing our big game and game birds irrespective of season. Under these conditions which existed for many years, and during such time, the people of Alberta were under the expense of protecting the fur-bearers, no revenue has been received for this. The Legislature

which closed April 10th, 1920, was justified in imposing a license on all buyers, dealers and exporters, and a tax on each pelt or skin of a wild animal taken in the Province of Alberta which is to be exported. The wild life of the province is the only natural resource controlled by the people of the province, and even if they had control of other resources, it would not justify them in allowing a very small proportion of the population to exploit this resource for their own gain without contributing something to the general revenue, where all moneys collected under The Game Act are deposited.

The tax on the pelts of wild animals, as adopted and which was based on prices prevailing during the month of April, proves to be at too high a rate. As the rate of taxation is fixed by Order-in-Council and may be changed from time to time to meet the fluctuations in the fur market, it is not considered wise to submit it in this report. Since this legislation has come into force it has been discovered that there are certain weaknesses which should be remedied to make it more workable and effective. As in 1919, there has been a continued scarcity of muskrat owing to excessive trapping and dry seasons, which has resulted in the drying up of many favorite breeding grounds. This being one of the staple furs, the prices prevailing may be of interest: In April as high as \$4.00 or more per pelt was paid while in November thirty-five to forty cents was the average. This had increased to sixty cents before the end of the year and, undoubtedly, will reach \$1.00 before the spring of 1921.

BRANDING GAME HEADS

Section 11 of the Act requiring the branding of game heads before buying or selling shows the following results:

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Mountain Sheep..	216	2	9	11	2	6	4	4	15	8	6	2	14	10
Mountain Goat...	62	..	1	1	2	2	2	2	..	..	..	..	1	..
Elk	41	3	4	2	2	1	..	..	1	3	..	..	..	3
Moose	39	29	33	32	40	40	48	42	30	22	10	19	14	19
Caribou	16	6	6	2	3	3	2	5	1	1	..	2	11	3
Deer	142	15	26	26	40	40	24	32	15	12	15	12	9	18
Antelope	95	5	..	3	3	3	3	10	..	..	..	6	..	..

LICENSES AND PERMITS

For the big game hunter, conditions during the early part of the season were not as favorable as usual, owing to the lack of snow for tracking purposes, with the result that there were not as many Farmers' Big Game Licenses issued as in 1913, 1914, and 1915, although more than in 1916, 1917, 1918 and 1919. There was an increase in the number of Residents' Big Game Licenses issued as compared with the years 1915 to 1919, inclusive. A greater number of Residents' Bird Game Licenses were issued in 1920 than in any year since 1913. During this year there were 11,207 Bird Game Licensees issued as compared with 13,021 in 1913. There were more General Game Licenses issued to non-residents in 1920 than during any previous year. Market Hunters' Licenses show an increase over the years 1915 to 1919, while Game Dealers show a decrease.

SALE OF GAME

The table on the next page shows the number of game birds and big game animals marketed, as shown by returns received from Market Hunters and Game Dealers from 1913 to 1920, inclusive.

MARKET HUNTERS

	1913	1914	1915	1916	1917	1918	1919	1920
Deer	7	14	5	..	2	1	5	5
Moose	43	34	17	10	15	14	16	13
Caribou	3	1	..	1	..	..	..	1
Geese	56	25	..	29	38	5	77	116
Swans . . . . .	..	..	..	..	..	..	..	..
Ducks	15,339	3,892	7,394	9,973	3,391	2,594	3,861	7,112
Mountain Sheep . . . . .	..	2	..	..	2	..	..	..

GAME DEALERS

	1913	1914	1915	1916	1917	1918	1919	1920
Deer	6	18	6	1	2	2	6	1
Moose	23	39	20	17	13	16	18	13
Caribou	3	..	..	1	..	..	..	..
Geese	76	..	..	..	..	1	13	35
Swans	1	..	..	..	..	..	..	..
Ducks	16,564	3,497	5,940	11,481	5,982	5,388	4,218	8,428
Mountain Sheep . . . . .	..	..	..	1	..	..	..	..

THE FOLLOWING TABLE SHOWS THE NUMBER OF LICENSES AND PERMITS SOLD EACH YEAR FROM 1907 TO 1920, INCLUSIVE

[illegible]

REVENUE FROM GAME—MONEY COLLECTED

[illegible]

The following licenses were issued to Treaty Indians free of charge on the strength of certificates from their agent, as provided for by Section 19c of The Game Act:

Resident Farmers' Big Game Licenses 57

Respectfully submitted,

BENJ. LAWTON,
Chief Game Guardian.

PRAIRIE FIRES REPORT, 1920.

I am very pleased to report that in 1920 very few fires occurred. Although the season throughout was comparatively dry, no fire of any consequence was reported except in the district to the west of Olds, where for a time it was thought that a serious bush fire might occur. Prompt action by the Alberta Provincial Police resulted, however, in getting it under control, very little damage being done. In other sections of the province where small fires occurred, the Alberta Provincial Police, fire guardians and residents of the districts prevented them from making much headway.

Railway companies had difficulty in securing the necessary teams and labor to contract for or replot fire guards along their lines. A fairly good showing was made, however, and although a number of fires were started by railway engines, prompt action prevented them from obtaining headway.

If we were fortunate enough for a number of years to have as few fires of as destructive a nature as occurred in 1920, we would have trees sprouting up in many sections where they are urgently needed. Owing to the periodical occurrence of destructive fires, young growth is destroyed with the result that winds have a greater sweep over prairie lands, causing the drifting of soils, the evaporation of moisture and lack of shelter for stock. Trees would prevent the drifting of snow in the winter and retain the moisture. They would not only provide firewood but shelter for bird-life, which in turn would prey on destructive insects. If those who year after year carelessly kindle fires would take into consideration the damage which they cause, both directly and indirectly, they would in all probability be very careful in future, as late spring fires are the greatest menace that ground-nesting birds have to contend with. Fires also destroy vegetation, thereby permitting evaporation of moisture from the soil with the result that the new growth is less luxuriant than otherwise would have been the case if the fires had not taken place.

The convictions reported and the total penalties imposed for the years 1907 to 1920 are as follows:

Year	No. of Convictions Reported	Total	Average Fine
1907	33	\$ 741.00	\$22.45
1908	105	1,570.00	14.95
1909	94	1,796.00	19.10
1910	247	4,247.38	17.20
1911	33	565.00	18.25
1912	56	1,008.00	18.00
1913	48	948.75	20.52
1914	89	1,395.93	15.68
1915	39	681.16	17.47
1916	113	2,121.19	18.77
1917	35	888.00	25.37
1918	40	946.90	23.67
1919	35	958.50	24.55
1920	11	224.60	20.41

Respectfully submitted,

BENJ. LAWTON,

Chief Fire Guardian.

WOLF BOUNTY

The Wolf Bounty Act being repealed, the payment of bounty was discontinued.

Respectfully submitted,

BENJ. LAWTON,

Chief Wolf Bounty Inspector.

GRASSHOPPER REPORT, 1920.

I have the honor to report on action taken to meet the grasshopper menace in 1920, which threatened a large section of the province lying to the south of the main line of the Canadian Pacific Railway and west of Range 17.

As instructed, I proceeded to Calgary and Lethbridge on the 14th day of June and ascertained what supplies were on hand to meet the situation. With those already on hand and those in transit, the demand for bran, molasses and Paris Green was met.

Although there were a great many grasshoppers in the Lethbridge and Cardston districts in 1919, little or no attention was paid to them as the vegetation was so sparse that very little damage could be done, and in the face of crop conditions which existed, those who should have been interested were apathetic. D. H. Strickland, Dominion Entomologist, stationed at Lethbridge, realizing the possibilities for 1920, obtained all possible information as to the extent of territory over which the grasshoppers were operating in the late summer of 1919. For his co-operation and his endeavors to assist in meeting the situation for

1920, he is deserving of much praise. Peter Tomkins, one of our salaried game guardians, was placed in charge of the distributing of supplies at Lethbridge, while James I. Brewster, game guardian at Calgary, looked after matters at that point and was later superseded by H. W. Scott, who in turn was superseded by W. Grant, of Olds. Mr. Scott returned to his duties at Sedgewick and later took charge of the outbreak at or near Czar, while A. W. Foley visited High Prairie, Consort, Monitor, Drumheller and Munson.

Our first efforts were centralized in Lethbridge district with the result that the farmers and municipal organizations took hold of the situation for their respective districts, purchased the necessary supplies and distributed the same. Many of the farmers in these districts obtained good results within a few days after the poison had been distributed.

By the first of July requests for information and assistance came from the Carlsland and Gleichen districts. The writer held a meeting at Carlsland with the result that the municipal council took hold of the situation, completed its organizations and was supplying those in the district who required grasshopper poison within three days after the meeting was held. This was followed by a request from the Gleichen district for supplies of poison. With the assistance and co-operation of Mr. Bodman of the agricultural school at that point, the menace was checked and a considerable area of crop saved, as in other districts where early efforts were put forth to meet the situation.

On Saturday, the 3rd day of July, a wire was received from the secretary of the United Farmers of Alberta at High Prairie, as follows:

High Prairie, Alta.

July 3, 1920.

Hon. Duncan Marshall,
Minister of Agriculture,
Edmonton, Alta.

Mass meeting held last night representing all parts of district. Since recent warm weather grasshopper situation very serious unless immediate action is taken by Government, great danger of all crops being totally destroyed. Please take matter up and reply by wire.

(Signed) N. J. Levans,

Secretary, U. F. A.

This wire was received at 12 a.m. and a supply of the necessary material was forwarded by the first train on Monday, July 5th. It was necessary owing to the very short notice to purchase supplies locally, which I regret to say cost considerably more than if we had taken time to ship from Calgary where our main stock was stored. It was considered, however, that the urgency of the situation justified the purchasing of the supplies even at the increased price. Those who used the poison properly at High Prairie secured results. The farmers at High Prairie reported that they had an outbreak of grasshoppers in 1916 and paid very little attention to them. They were not troubled again until 1918 when some crop was lost by this pest. They were not troubled in 1919 but by the tone of the telegram forwarded to this department, it would appear that they were very much concerned as to the outcome for 1920.

At every point in the province where the poison was properly used good results were secured and it was clearly demonstrated that the mixture of bran, Paris Green or arsenic, with molasses, water and lemons, provides a mixture which will result in the destruction of innumerable numbers of grasshoppers, if instructions are followed.

Grasshoppers were found on the Indian Reserve at Wabamun, in the Grand Cache district, to the north of the Yellowhead Pass, at Edgerton, at points between Drumheller and Calgary on the Canadian National Railway, between High River and Macleod, Macleod and Pincher, all along the Cardston branch of the C.P.R., from Stirling to Coutts, Lethbridge east to Coaldale, Lethbridge to Barons, and Calgary to Gleichen. Reports came from the Foremost district but were unconfirmed.

It is only reasonable to presume from the habits of this pest that unless conditions are unfavorable, there will be a very extensive outbreak during the coming season which will be found to extend over a much greater area than in 1920.

Materials amounting to \$15,659.76 were used in fighting the pest; this consisted of the following:

Arsenic—9,414 pounds.
Bran—2,106 sacks.
Lemons—56 cases.
Molasses—147 barrels and 380 gallons.
Paris Green—5,350 pounds.
Salt—600 pounds.

I might say that if results are to be obtained in 1921, a large force of men properly posted as to the habits and methods to be adopted for destroying grasshoppers should be available. The campaign should not last more than two months, and if action is taken as soon as the young 'hoppers are discovered, the cost of destroying them will be of minor importance when the amount of crop saved is considered. Supplies were furnished at cost. The expenditure for administration was not added to the price of material, this being borne by the province at large. The average cost of preparing 100 pounds of bran by poisoning it with the ingredients mentioned in the formula given below was approximately \$1.65, the mixture when prepared weighing approximately 175 pounds:

THE KANSAS BAIT

Bran—50 pounds.
Paris Green or White Arsenic—2 pounds.
Molasses—4 quarts.
Oranges or lemons—6 fruits.
Water—5 to 6 gallons.

In our efforts to meet this unusual situation, it being the first outbreak of grasshoppers experienced in the Province of Alberta, we received every consideration and co-operation from express companies, wholesale houses, milling companies, municipal and farmers' organizations as well as from bankers and other public-spirited citizens.

Respectfully submitted,

BENJ. LAWTON,

Chief Game Guardian in Charge.

REPORT OF THE ALBERTA NATURAL HISTORY SOCIETY

RED DEER, December 31st, 1920.

SIR,—I beg to submit herewith the Annual Report of the Alberta Natural History Society for 1920.

Respectfully submitted,

C. H. SNELL,

Secretary-Treasurer.

ENTOMOLOGICAL REPORT FOR 1920.

(By F. C. WHITEHOUSE)

In this, my seventh annual report, I am able to state that so far as central Alberta is concerned, insect pests during the past season (1920), caused less trouble than usual. Spring opened very late, and weather conditions were not favorable for cutworms. It was cold and wet when the "worms" were in their early stages, so Nature in her own way headed off the multiplication of the insects promised in 1918 and 1919.

Beet Web-worms.—In Alberta they appear to be widening their range. South of Red Deer they were reported by several farmers, and in one garden, to my personal knowledge, very considerable damage was done. The food-plant of this pest is lamb's quarters, for which reason it is a dangerous weed in the vicinity of gardens.

By the kindness of the Dominion Entomologist, Mr. Arthur Gibson, I am able to add the following interesting report of insects of the year in Alberta prepared by Mr. E. H. Strickland.

Owing to an unusually wet and cold spring there was practically no insect activity in any part of Alberta before the middle of May, when a few hibernating adults, such as *Vanessa antiopa* Lucillid and Carabid species were in evidence. With the approach of summer, however, insects became unusually abundant, and the season was marked by severe outbreaks of several insects of economic importance.

Grasshoppers.—The most severe outbreak of grasshoppers since Alberta became an agricultural province was experienced this year. The worst infected area was in the western half of the Province and south of the C.P.R. main line, though a local outbreak of *M. atlanis*, together with other less abundant species, at High Prairie in the Peace River district, was investigated by Mr. D. E. Mackie.

The Pellucid or Road-side grasshopper (*Camnula pellucida* Scud.) and the Less Migratory grasshopper (*Melanoplus atlanis* Riley) were responsible for about 90 per cent. of the damage. Other species, however, were unusually abundant. Most noticeable were the two-striped (*M. bivittatus* Say), Packard's (*M. packardii* Scud.) and the Carolina (*Dissosticra carolina* Linn.) grasshoppers.

From the excessive numbers of eggs found in the autumn—at several places these exceeded 1,750 to the measured square foot—it can be assumed that we may have a more serious outbreak in 1921.

Cantharid and Bombyliid larvæ were moderately numerous, feeding on these eggs in the extreme south, but north of line running east and west through Claresholm no enemies of the grasshopper have been found.

Crickets.—The large repulsive-appearing Coulee Cricket (*Peranabruscacebracollis* Thom.) was unusually abundant in the foot-hill country and it extended farther eastward than is usual. It has deposited numerous eggs in grain fields and in sod.

Field Crickets (*Gryllus pennsylvanicus* Burm.) were very numerous in the autumn.

Cutworms.—The red-backed cutworm (*E. ochragaster* Gn.) which is frequently a serious pest, was rarely present in destructive numbers. This was due, probably, to heavy parasitism by the Hymenopteron *Amblyteles suturalis* and by Tachinidae in 1919.

The pale western cutworm (*P. orthonoia* Moir), however, took heavy toll of grain crops in the open prairie, though the height of the present outbreak has apparently been passed.

In the fall larvæ of *Euxoa tristicula* were taken in numbers from summer fallow at Retlaw. In 1918-19 this species caused considerable alarm, though they did no damage. Over 33 per cent. of the hibernating larvæ were killed in the spring by the polembryonic Chalcid, (*Berecynthus bakeri* How), of which an average of 824 adults escaped from every parasitised larva.

The Beet Webworm (*Loxostege sticticalis* L.) This year probably witnessed the most widespread outbreak of this insect that has ever occurred in Alberta. Of the two generations, the second, of which the larvæ appear in September, usually far exceeds the first in point of numbers. During the first half of June adults were very abundant, and eggs could be found frequently on Lambs-quarters (*Chenopodium album* L.) By the middle of July larvæ of the first generation appeared in unprecedented numbers throughout the south-western portion of the province, and were recorded as unusually numerous as far north as Edmonton. Gardens disappeared almost overnight. On July 19th two trains on different lines running south from Calgary were stopped by migrating larvæ, and a few days later the city of Calgary itself was invaded to an extent that seriously annoyed and alarmed the citizens.

The outbreak of webworms was, however, decidedly beneficial to Alberta. Grain fields for hundreds of square miles, had their value enhanced by anywhere up to 100 per cent. by these larvæ. The late season had necessitated excessive "stubbleing in" and many fields contained far more weeds than wheat, with insufficient moisture to develop this multiple crop. In such fields hungry swarms of webworms destroyed all classes of weeds while their feeding on the grain crop was confined to an occasional nibble at the upper epidermis of a blade.

The second flight of moths exceeded anything ever experienced before. A trap hung under an ordinary porch light at Lethbridge overflowed on several occasions in August, having captured its capacity limit of 15,000 moths.

Rains in July caused a rapid growth of weeds that were soon plastered with eggs. A subsequent total drouth of many weeks duration accompanied by hot winds, dried up these egg-infested weeds. With them perished a generation of newly-hatched webworms which given favourable conditions, would probably have caused 1920 to be long remembered in Alberta as "the worm year."

A few larvæ apparently underwent a forced development owing to lack of food, for on September 14 a few very much undersized adults, representing a partial third generation, were taken at Lethbridge.

Wheat Stem Sawfly.—Larvæ of what is probably the Western Wheat Stem Sawfly (*Cephus occidentalis* R. & M.) were found at Brooks where they had cut off a number of maturing wheat stems. The injury was confined to small areas around the edges of a field, but this is the first record in Alberta of the presence of a pest that has caused up to 70 per cent. damage in individual fields in Manitoba.

The currant worm (*Pteronuss ribesii* Scop.) was noticed at Lacombe, as was also the Diamond Backed Moth (*Plutella maculipennis* Curt.) which attracted somewhat widespread attention and was occasionally considered as a wheat pest on account of larvæ from weeds ascending to the grain heads for pupation. Potato beetles (*Leptinotarsa decemlineata* Say) cleaned out most of the wild tomato found in grain fields and waste places, but were not exceptionally numerous on potatoes.

Shade trees in the south were unusually free from insects. The noctuid (*Rynchagrotis placida* Grote) was bred from larvae collected on cottonwoods. The sphingid (*Pachysphinx modesta* Harr.) did little damage to cottonwoods while one leaf only of these trees was found with a blackened area indicating that it contained a larva of the leaf mining beetle (*Zeugophora scutillaris* Suffr.)

The dung beetle (*Aphodius inguinatus* Abst.) attracted some attention in the fall by settling in dense masses on and rapidly triturating all horse droppings on country roads.

House flies and the clothes moth (*Linna pellionella* Linn.) have been unusually abundant, the latter having spread to many villages that were previously uninfested.

ALBERTA NATURAL HISTORY SOCIETY.

EXECUTIVE REPORT, 1920

It is with much regret that we have to report some serious losses from the personnel of the society's executive during the past year. Mr. F. C. Whitehouse, for several years manager of the Red Deer branch of the Canadian Bank of Commerce, has been moved to Nelson, B. C.

He has been a member of this society for some years and its president since January, 1917.

An enthusiastic naturalist, particularly interested in Entomology, he devoted much of his time to the study of insect pests, publishing many articles and reports which have proved of great value to the farmers of this province.

His pamphlet on the Dragonflies (*Odonata*) of Alberta was published by this Society in 1918, and attracted wide interest.

The society's entomological report, originated and prepared by him, has become one of the most valuable features of our annual report.

We have also to report the resignation of Miss R. E. Fyson from the position of Secretary-Treasurer, on her return to England.

In August last this society published Mr. F. S. Carr's annotated list of the Coleoptera of Northern Alberta. As noted by Mr. Carr, in his introduction, this is the first "Beetle" list published for any region west of Toronto. It is proving of great interest and usefulness to collectors and students of this important order.

A branch of the Alberta Natural History Society was formed in Medicine Hat in March last.

Keen interest is being taken in field work and some assistance has been rendered in the formation of a museum in the Medicine Hat high school.

In the spring of this year some consideration was given to the question of the better protection of our wild birds in this province. As a result of this, several of our members applied for, and received, appointments as Honorary Bird Wardens under the Migratory Birds Convention Act.

The Red Deer School Fairs Association held its first annual fair in Red Deer on October 1st.

Our Society offered prizes at that event in the following classes: Collection of Insects, named; Collection of Plants, named; Collection of Noxious Weeds with Seeds. Although these classes were not as well filled as we could have wished, much interest was shown and there is every prospect of a much keener competition if these classes should be continued in next season's fair.

Prizes were again offered at the Red Deer Horticultural Society's show, but the class did not fill and but one was awarded.

In June last two of our members, Mr. F. C. Whitehouse and Mrs. W. A. Cassels, were invited to Edmonton to assist in the university extension work amongst young farm people.

In spite of inclement weather, some useful work was accomplished. The society's publications are attracting wide attention and much favourable comment."

Students or organizations desiring copies of any of the following can obtain them by applying to the Secretary, Red Deer.

Annotated Check List of the Macrolepidoptera of Alberta by Kenneth Bowman, Dragonflies (Odonata) of Alberta by F. C. Whitehouse, Annotated List of Coleoptera of Northern Alberta by F. S. Carr.

SECRETARY-TREASURER'S REPORT FOR THE YEAR ENDING NOVEMBER 30TH, 1920

The fourteenth annual meeting of the Alberta Natural History Society was held in the Public Library, Red Deer, on Friday, November 28th, 1919. At the business session in the afternoon the following officers were elected for the year 1920:

Hon. President—The Hon. Duncan Marshall.
First Hon. Vice-President—Mr. J. J. Gaetz, M.P.P.
Second Hon. Vice-President—Mr. H. A. Craig.
President—Mr. F. C. Whitehouse.
First Vice-President—Mrs. W. A. Cassels.
Second Vice-President—Dr. Henry George.
Secretary-Treasurer—Miss R. E. Fyson.
Directors—Mrs. H. George, Mrs. S. Pameley, Mrs. G. F. Root, Mr. E. Wilton,
Mr. K. Bowman, Mr. F. S. Carr, Mr. D. Mackie, Mr. C. H. Snell, Mr. W. F. Harris.
At the well-attended evening session the executive report was read by Mrs. W. A. Cassels and the entomological report by Mr. F. C. Whitehouse.

These reports were followed by an interesting paper on the Crow family by Dr. George, supplemented by a number of specimens of birds and eggs from the doctor's museum.

This was followed by an excellent talk on the Birds of Flagstaff, Alberta, by Professor Fleming of Edmonton.

The following papers were given at other meetings during the year:

January 30.—"Insects and Civilization," by Mrs. S. Pameley.

February 27.—"Conservation of Wild Life," by Mr. W. F. Harris.

March 24.—"Insect Camouflage," by Mr. F. C. Whitehouse.

April 30.—"Through Life's Windows," by Mr. H. J. Snell.

A very enjoyable field day was held on July 1st—a trip to the canyon of the Red Deer river, about seven miles east of the city.

The monthly meetings were suspended as usual during the summer months.

FINANCIAL REPORT

RECEIPTS:	EXPENDITURES:
Balance in Hand Dec. 1, 1919 \$ 96.11	Printing and Stationery \$ 11.75
Members' Fees 4.75	Railway Fares 9.15
Government Grant for 1919. 100.00	Canadian Field Naturalist.. 4.00
Government Grant for 1920. 100.00	Stamps 1.15
	Livery 7.50
	Prize at Horticultural Show 2.50
	Hamly Press 91.80
	War Memorial Committee (Donation) 25.00
	Prizes at Red Deer Schools Fair 14.00
	Donation to Geo. L. Cook... 10.00
	Secretary's Salary (9 mos.) 16.25
	Balance in Bank 107.76
Total \$300.86	Total \$300.86

C. H. SNELL,
Secretary-Treasurer.

Audited November 24th, 1920, by S. Pameley.

*APPENDIX TO THE REPORT OF
THE LIVE STOCK COMMISSIONER*

HORSE AND CATTLE SHIPMENTS.

Shipping Point	Inspector	Horses		CATTLE								
		Local	Export	Total	Male	Female	Calves	Yrlings	Mature	Local	Export	Total
Aene	W. M. Holsenpillar.	127	18	145	771	876	469	71	1,107	1,647	...	1,647
Andre	Leslie Farr	274	76	350	1,526	1,187	410	158	2,145	2,271	442	2,713
Alderson	G. M. Tompson	38	595	633	194	167	12	40	309	244	117	361
Allamore	L. K. Craimer	29	...	29	228	274	24	32	446	502	...	502
Amack	P. W. Harrison	62	26	88	245	195	11	13	416	237	203	440
Arlomede	A. Jensen	26	...	26	411	440	117	14	720	530	321	851
Arley	T. J. Hampton .....	...	5	5	123	112	12	22	201	232	3	235
Atulasa	A. Archambault	8	11	19	91	89	14	3	163	176	4	180
Atulasa	G. Devlin .....	...	...	...	57	57	...	9	105	114	...	114
Athol	E. Hay	543	22	565	1,105	591	126	17	1,553	601	1,095	1,696
Ahn	H. G. Finch	74	...	74	874	1,046	332	138	1,450	1,828	92	1,920
Ankerton	H. J. Bronson .....	...	17	17	...	11	5	...	6	...	11	11
Aldersyde	W. B. Way	54	...	54	310	340	352	43	255	650	...	650
Arthrossan	W. Seymour	9	...	9	31	31	18	2	42	62	...	62
Ashmont	W. R. Wilson .....	...	...	...	60	35	...	...	95	95	...	95
Esshaw	J. C. Windsor	82	34	116	1,161	1,307	289	324	1,855	2,253	215	2,468
Bassano	W. J. Brogan	108	13	121	1,097	843	25	29	1,886	1,201	739	1,940
Boiseker	F. Lout	114	2	116	468	614	306	60	716	1,033	49	1,082
Benalto	W. A. McKee	23	...	23	341	365	35	59	612	706	...	706
Bindloss	G. E. Chudleigh	47	42	89	240	321	224	...	337	141	420	561
Bittern Lake	O. H. Torreson	10	...	10	171	177	138	3	207	170	178	348
Blackie	F. Rockafellow	725	16	741	1,763	1,173	46	15	2,875	1,868	1,068	2,936
Blackfalds	J. Capron	14	...	14	368	283	29	82	480	591	...	591
Bon Accord	H. A. Whittaker	6	...	6	164	127	7	3	281	291	...	291
Botha	D. O. Kierbow	33	3	36	746	486	22	51	1,129	634	568	1,202
Bowell	J. Delinks	166	81	247	83	76	12	5	142	159	...	159
Rowden	R. McCue	104	2	106	424	262	30	127	529	591	95	686
Bullockville	C. H. Bucknell .....	...	...	...	20	17	...	...	37	37	...	37
Brooks	A. L. Young (Dep.)	160	90	250	5,047	2,473	30	19	7,471	5,179	2,341	7,520
Brooks	N. Stafford	113	5	118	2,546	561	38	...	3,069	521	2,586	3,107
Bruce	R. L. Summers	99	...	99	478	678	162	92	902	749	407	1,156
Blackfoot	W. J. Truscott	150	37	187	84	155	23	3	213	17	222	239

Bow Island	251	31	282	51	107	11	16	131	114	-44	158
Bawlf	43	36	79	273	315	135	25	428	586	2	588
Brant	294	23	317	651	718	107	4	1,228	1,355	44	1,399
Bellis	17	...	17	165	138	10	2	291	303	...	303
Burdett	15	27	42	52	91	13	21	109	142	1	143
Bruderheim	20	...	20	246	305	57	8	486	551	...	551
Cadogan	43	29	72	170	105	5	...	270	47	228	245
Calgary	4,256	1,781	6,037	17	228	20	6	219	237	8	245
Calgary	1,677	465	2,142	52,204	40,309	9,814	329	82,370	45,407	29,106	92,313
Camrose	215	18	233	735	693	265	129	1,034	1,288	140	1,428
Carmangay	170	18	188	293	210	38	25	440	444	59	503
Carvel	...	...	...	108	91	1	...	198	199	...	199
Castor	...	4	5	986	718	228	28	1,448	673	1,031	1,704
Castor	77	...	77	335	335	93	3	490	533	53	586
Cayley	94	50	144	2,725	1,887	186	95	4,331	2,356	2,256	4,612
Champion	38	6	44	132	116	5	6	237	248	...	248
Chauvin	39	37	76	484	495	33	5	941	164	815	979
Cherhill	10	...	10	245	227	35	42	395	472	...	472
Chigwell	...	...	5	51	11	...	...	62	62	...	62
Clive	26	...	26	489	654	129	61	953	772	371	1,143
Cluny	135	132	267	67	195	6	6	250	262	...	262
Cochrane	669	225	894	816	1,308	271	167	1,686	1,556	568	2,124
Coleman	16	9	25	5	37	1	18	23	27	15	42
Colinton	6	...	6	67	91	1	6	151	158	...	158
Consort	100	25	123	251	263	25	52	437	207	307	514
Coronation	257	79	336	1,354	1,238	231	154	2,207	1,603	989	2,592
Craigmyle	29	...	29	591	588	152	92	935	1,179	...	1,179
Crossfield	519	42	561	1,192	1,310	328	218	1,956	2,260	242	2,502
Chipman	...	...	43	995	965	210	9	1,711	1,960	...	1,960
Clyde	44	3	47	253	311	70	113	381	550	14	564
Claresholm	110	18	128	242	211	12	10	431	365	88	453
Cardston	156	3	159	1,398	1,009	93	9	2,305	655	1,752	2,407
Cereal	...	3	4	25	10	...	4	31	12	23	35
Cowley	142	6	148	271	277	4	3	541	419	129	548
C'zar	25	36	61	1,003	688	22	15	1,654	134	1,557	1,691
Coutts	13	105	118	168	139	4	6	297	95	212	307
Clairmont	4	...	4	575	351	28	1	897	804	122	926

HORSE AND CATTLE SHIPMENTS—(Continued).

Shipping Point	Inspector	Horses			CATTLE							
		Local	Export	Total	Male	Female	Calves	Yearlings	Mature	Local	Export	Total
Claxmore	G. C. Dunsmore	...	...	...	82	17	...	1	98	1	98	99
Compeer	H. L. Barriek	18	5	23	52	65	...	...	117	3	114	117
Darwell	D. Macleod	3	...	3	106	50	5	...	151	114	42	156
Daysland	J. Berry	33	3	36	425	490	163	146	606	884	31	915
DeWinton	T. Polzell	23	...	23	527	105	35	39	558	271	361	632
Didsbury	W. F. Siek	467	30	497	1,357	1,390	293	212	2,242	2,655	92	2,747
Dinant	W. R. Porter	...	...	...	112	72	1	19	174	194	...	194
Dalemead	J. H. Dixon	45	5	50	667	490	1	1	1,155	1,157	...	1,157
Donalda	O. M. Vikse	106	14	120	590	679	169	46	1,054	489	780	1,269
Dunfield	P. Faulks	...	2	2	164	181	25	14	306	343	2	345
Dunsmore Jc.	H. N. Cayon	25	541	566	925	606	7	1	1,523	430	1,101	1,531
Dalroy	G. F. Snoxall	23	38	61	129	109	5	5	228	238	...	238
Delia	W. H. E. Whiting	69	...	69	784	597	86	39	1,256	1,381	...	1,381
Denville	J. C. Curlett	30	...	30	50	106	7	42	107	156	...	156
Duchess	J. C. Christianson	184	8	192	529	389	59	...	859	285	633	918
Delbourne	A. E. Kent	75	...	75	222	183	9	49	347	405	...	405
Donnelly	L. Pressoir	2	...	2	...	5	1	...	4	5	...	5
Eckville	D. C. Clausen	13	...	13	190	190	37	7	336	313	67	380
Edberg	H. Kibbe	3	4	7	118	87	18	16	171	205	...	205
Edgerton	W. Bullymore	101	45	146	570	503	108	79	886	349	724	1,073
Edmonton	W. A. Flack	11	...	11	2,470	1,469	628	8	3,303	2,231	1,708	3,939
Edmonton	C. Logan	1,352	180	1,532	26,875	24,402	5,370	487	45,420	36,678	14,599	51,277
Edmonton	T. B. Webb	2,412	314	2,726	140	876	41	78	897	969	47	1,016
Egremont	A. L. Bennett	1	...	1	17	19	4	...	32	36	...	36
Elhora	A. Hogg	19	5	24	877	501	50	59	1,269	1,047	331	1,378
Empress	H. H. Hall	11	99	110	1,219	932	687	67	1,397	1,771	380	2,151
Erskine	A. G. McNiven	124	...	124	716	711	361	67	999	1,015	412	1,427
Etzakom	W. Thiel	89	11	100	147	98	7	25	213	243	2	245
Enilda	J. Tomkins	133	7	140	496	307	50	79	674	649	154	803
Enchant	R. Bye	11	...	11	11	22	...	...	33	33	...	33
Erntosh	W. J. McIntyre	69	...	69	644	792	273	111	1,052	1,225	211	1,436
Fleet	J. Baker	16	2	18	179	185	43	41	280	309	55	364

Forestburg	74	2	76	226	236	107	45	310	454	8	462
Forestburg	50	2	52	152	191	88	32	223	335	8	313
Fort Saskatchewan	89	29	118	829	1,048	151	32	1,694	1,877	.....	1,877
Fabyan	14	.....	14	.....	.....	.....	.....	.....	.....	.....	.....
Federal .....	.....	.....	.....	14	8	.....	.....	22	.....	.....	22
Gadsby	143	4	147	1,477	1,066	281	124	2,138	1,106	1,437	2,543
Gainford	2	5	7	54	37	2	8	81	91	.....	91
Galahad	32	15	47	579	723	146	62	1,094	1,154	148	1,302
Gleichen	327	48	375	2,095	1,049	60	132	2,952	2,495	649	3,144
Grainger Station	17	14	31	377	475	123	45	684	852	.....	852
Grande Prairie	17	4	21	755	117	1	13	858	739	133	872
Gwynne	7	.....	7	205	205	111	8	291	410	.....	410
Halkirk	168	12	180	1,142	957	337	42	1,720	1,146	953	2,099
Hanna	159	74	233	886	840	34	117	1,575	1,615	111	1,726
Hespero	28	.....	28	165	126	25	19	246	291	.....	291
Hobbs	308	21	329	700	387	82	23	972	983	104	1,087
Husar	22	.....	22	2,823	1,305	251	1	3,876	821	3,307	4,128
Hughenden	32	.....	32	254	333	10	41	536	177	410	587
Huxley	126	3	129	850	349	94	60	1,045	725	474	1,199
High River	677	71	748	2,699	2,306	79	370	4,646	4,446	649	5,095
Hay Lake	42	.....	42	375	304	37	119	523	679	.....	679
High Prairie .....	.....	.....	.....	74	75	.....	.....	149	149	.....	149
High Prairie	37	.....	37	469	404	36	18	819	863	10	873
Holden	132	24	156	548	581	74	10	1,045	678	451	1,129
Hardisty	76	4	80	454	464	2	.....	916	274	644	918
Heisler	13	.....	13	217	232	89	41	319	400	49	449
Iddesleigh	24	.....	24	90	98	.....	6	182	188	.....	188
Innisfail	388	69	457	2,063	1,273	150	180	3,006	2,704	632	3,336
Innisfree	131	3	134	201	339	94	12	434	472	68	540
Irma	92	18	110	519	499	140	116	762	557	461	1,018
Irvine	121	457	578	105	197	22	10	360	128	291	392
Islay	114	32	146	1,224	993	148	81	1,988	926	1,291	2,217
Jarrow	5	.....	5	292	345	48	111	478	474	163	637
Jenner	108	47	155	321	345	7	17	642	244	422	666
Keoma	65	.....	65	558	508	65	6	995	994	72	1,066
Kingman	6	.....	6	130	235	13	12	340	357	8	365
Kinsella	78	27	105	558	646	82	16	1,106	975	229	1,204

HORSE AND CATTLE SHIPMENTS—(Continued).

Shipping Point	Inspector	Horses			CATTLE							Total
		Local	Export	Total	Male	Female	Calves	Yr'lings	Mature	Local	Export	
Kitcooty	E. R. H. Phillips.	165	18	183	1,731	1,352	65	70	2,948	665	2,418	3,083
Kelsey	C. D. Bower	68	27	95	147	150	64	5	226	289	6	295
Kerriemuir	E. Morris	12	...	12	295	142	9	6	422	119	318	437
Killam	S. L. Coy	93	58	151	211	234	42	47	356	414	31	445
Lacombe	F. McFridgie	385	59	444	3,000	2,503	522	515	4,166	3,407	2,096	5,503
Lamont	H. Harris	97	...	97	801	785	189	40	1,357	1,586	...	1,586
Ledne	A. F. Wezha	74	2	76	875	937	154	316	1,342	1,871	28	1,812
Ledne	J. W. Morley (Dep)	21	...	21	28	45	5	18	50	73	...	73
Lethbridge	T. McNeill Sr.	520	96	616	940	1,124	35	68	1,961	1,637	127	2,064
Lomond	J. R. McKay	40	34	74	59	37	4	...	92	42	54	96
Lousana	H. J. Ancion	166	8	174	276	420	123	24	549	696	...	696
Loyalist	E. Brown	69	2	71	43	60	18	20	65	103	...	103
Langdon	W. Alcock	45	10	55	316	277	22	210	561	540	53	593
Landbreck	A. McCulloch	120	82	202	477	386	2	30	831	298	565	863
Lea Park	N. D. Homess	32	...	32	54	50	6	5	93	22	82	104
Lloydminster	H. Miller	55	58	113	2,642	2,245	344	241	4,302	1,797	3,090	4,887
Lake Louise	R. A. Gowan	64	51	115	...	...	...	...	...	...	...	...
Lake Isle	E. F. Bigland	23	...	23	49	52	6	14	81	101	...	101
Lyndon	W. A. Lyndon	63	...	63	314	345	11	32	646	689	...	689
Macdon	R. A. McAfee	232	87	319	235	118	13	30	310	150	203	353
Mannville	R. D. Ireland	32	22	54	1,079	1,152	76	106	2,049	1,156	1,075	2,231
Manyberries	J. W. Smiley	79	66	145	173	179	12	...	340	352	...	352
Medicine Hat	J. H. G. Bray	1,136	744	1,880	302	509	79	79	653	292	519	811
Meeting Creek	H. P. Sperry	13	...	13	45	53	...	8	90	98	...	98
Metiskow	J. C. McNiven	4	...	4	72	66	5	2	131	35	103	138
Midnapore	J. Dowling	55	18	73	210	143	84	2	267	353	...	353
Millet	A. P. Mitchell	93	8	101	554	511	149	177	739	1,063	2	1,065
Mirror	G. Ray	6	8	14	143	176	29	39	251	161	158	319
Monitor	A. Grace	67	26	93	384	361	42	95	608	160	485	745
Morinville	F. Beaudry	20	...	20	1,039	866	305	29	1,571	1,905	...	1,905
Morrin	W. R. Stickney	103	21	124	317	375	47	66	579	660	32	692
Morrin	A. S. Flown (Dep)	97	155	252	469	640	158	105	846	1,073	36	1,109

Mundare	Val Mohr	14	7	21	771	658	138	34	1,257	1,405	24	1,429
Munson	A. M. Valley	217	25	242	269	245	78	82	354	514	.....	514
Minburn	E. Huffman	6	7	13	4	10	1	.....	13	14	.....	14
Magrath	B. Matkins	96	74	170	165	634	387	27	385	572	227	799
Morley	D. Cameron	76	.....	76	356	291	43	.....	604	524	123	647
Namaka	E. C. Watts	30	.....	30	417	397	.....	85	729	814	.....	814
Nanton	W. Robertson	207	10	217	2,029	2,162	551	165	3,475	2,163	2,028	4,191
New Dayton	D. M. Boyd	34	.....	34	114	243	30	.....	327	332	25	357
Nordegg	F. Spoor	28	.....	28	10	14	2	.....	22	24	.....	24
Nobleford	K. R. Hunt	36	.....	36	52	166	1	50	167	218	.....	218
Nevis	A. B. Carrol	100	47	147	234	90	72	23	229	116	208	324
Natchely	H. Forster	3	.....	3	.....	.....	.....	.....	.....	.....	.....	.....
Nightingale	A. McLean	233	.....	233	299	481	7	.....	773	780	.....	780
Onaton	A. W. Fleming	55	6	61	268	150	150	20	222	363	29	392
Onaway	T. J. Meekham	6	.....	6	144	175	10	53	256	319	.....	319
Opal	P. J. Macowich	.....	.....	.....	104	69	2	.....	171	173	.....	173
Oyen	E. McArthur	31	91	122	139	141	26	52	202	279	1	280
Okotoks	G. E. S. Paterson	338	55	393	1,162	920	260	100	1,722	1,116	966	2,082
Parkland	A. E. Jones	14	.....	14	70	54	2	11	111	124	.....	124
Peace River Cross- ing	J. D. Landale	50	15	65	502	364	.....	25	841	864	2	866
Ponoka	W. E. Turner	77	13	90	1,707	1,431	362	172	2,604	2,748	390	3,138
Provost	T. Morrell	20	20	40	630	320	22	101	827	427	523	950
Purple Springs	G. R. Palfrey	13	.....	13	353	322	75	15	585	675	.....	675
Phillips	E. D. Conger	4	.....	4	24	26	3	.....	47	50	.....	50
Pincher Creek	S. W. Berry	11	24	35	223	193	3	9	404	121	295	416
Priddis	G. Gormsby	.....	.....	.....	224	225	.....	.....	449	449	.....	449
Ranfurly	J. A. McDonald	50	.....	50	227	297	100	29	395	524	.....	524
Redcliff	John Ellis	128	45	173	155	167	11	.....	311	146	176	322
Red Deer	W. G. Kidwell	84	5	89	4	47	10	10	31	49	2	51
Redlands	B. Wishart	95	10	105	704	919	611	112	900	1,623	.....	1,623
Redlands	E. Kenney	19	.....	19	413	446	150	54	655	289	570	859
Redlaw	G. F. Podoll	163	49	212	33	33	7	.....	59	66	.....	66
Richdale	A. T. Penwarden	43	10	53	160	196	19	40	297	345	11	356
Rockyford	J. Bragg	.....	.....	1,132	1,666	1,465	124	38	2,069	2,690	441	3,131
Rosebud	J. Martin	2	57	2	32	32	.....	2	62	64	.....	64
Round Hill	W. Ross	13	.....	13	154	181	39	56	240	179	156	335
Rumsey	G. Winkler	60	35	95	112	171	26	40	217	283	.....	283

HORSE AND CATTLE SHIPMENTS—(Continued).

Shipping Point	In-shipment	Horses		CATTLE						
		Local	Export	Total	Male	Female	Calves	Yr-lings	Mature	Total
Ryley	P. P. Kjosness	118	16	134	411	382	90	18	685	793
Rowley	H. Swallow	22	...	22	121	90	55	8	148	211
Redwater	E. F. Brown	...	...	...	119	67	...	14	171	186
Ribstone	A. H. Irving	11	3	14	186	92	22	8	218	278
Ridway Cen.	A. Gould	28	...	28	207	179	14	41	331	386
Rosalind	C. F. Krueger	49	...	49	328	465	332	64	397	793
Rockstar	A. S. McDonald	1	...	1	19	19	1	...	37	38
Ronahue	W. E. McGregor	...	...	...	79	25	...	...	104	104
Roehfort	J. E. Pea	6	...	6	...	...	...	...	...	...
Red Willow	J. Struthers	255	15	270	565	393	66	121	771	958
Rice	N. Riley	...	...	...	117	128	...	3	242	245
Saugando	W. H. Albers	85	...	85	722	836	111	148	1,299	1,558
Seven Pers.	H. Bergman	71	60	131	127	140	13	21	233	147
Spring Coulee ...	H. E. Kelley	277	...	277	460	475	25	19	891	935
Spruce Gr.	P. Jones	9	1	10	176	260	21	38	377	436
Stettler	F. R. Smith	159	26	185	1,204	903	509	203	1,395	1,376
Stirling	M. L. Miller	2	...	2	...	2	...	...	2	2
Strathmore	F. O. Boartz	281	176	457	1,359	1,028	203	29	2,155	2,387
Strone	W. T. Phipps	19	42	61	234	363	52	91	451	597
Strathcona	T. B. Webb for G. MacDonald	222	27	249	952	1,207	440	41	1,678	1,868
Swan River	M. Whitecotton	23	...	23	87	113	9	4	187	200
Swallow	E. Young	114	...	114	314	291	53	83	469	605
Sylvan Lake	D. Jamieson	22	2	24	241	151	3	79	310	392
Spirit River	S. Majean	...	...	...	133	138	22	13	236	271
Stony Plain	C. Shottick	62	...	62	309	290	37	36	526	599
Sedgewick	H. Gascoyne	78	4	82	481	367	123	70	655	848
Smoky Lake	M. J. Cebuliak	...	...	...	...	...	...	...	...	...
St. Albert	N. L. Imbardean	63	...	63	181	249	7	31	392	430
Sudfield	M. A. Breen	283	83	366	477	205	14	7	661	173
Sexsmith	H. Sheedy	50	...	50	11	9	...	...	20	20
Standard	D. F. McGowan	42	...	42	337	300	10	...	627	637
Shepard	T. O. Watson	3	...	3	16	16	32	32

*APPENDIX TO THE REPORT OF THE
SUPERINTENDENT OF FAIRS AND INSTITUTES*

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DEPARTMENT OF AGRICULTURE

No.	Locality	Gov't grant paid in 1919	Total Receipts	Total Expenditure	Balance on Hand	Overdraft	Assets	Liabilities	Date of Exhibition	No. of entries
1	Cardston									
2	Deseret	\$ 348.00	\$1,252.81	\$ 857.55	\$ 395.26		\$3,050.26	\$ 630.00	Aug. 3-4	
3	Dulodny	726.77	4,939.24	4,373.67	221.57		1,821.57	1,294.55	Sept. 16	959
4	Eaststar	1,757.33	8,272.08	8,200.37	71.71		6,901.46	5,972.60	July 26-27	953
5	Lancome	2,507.20								
6	Red Deer	3,150.00	14,882.26	14,802.06	80.20		12,709.11	6,882.83	July 12-14	
7	Macleod	1,253.00	5,670.92	5,668.46	2.46		1,793.16	3,416.55	Aug. 1-5	1,270
8	Medicine Hat									
9	Olds	970.00	4,795.72	4,433.70	362.02		5,162.02	3,500.00	July 28-29	563
10	Ponoka									
11	Raymond	1,229.00	4,460.45	4,257.17	203.28		4,186.70	800.00	Aug. 6-7	1,029
12	Okotoks	575.00	2,163.59	2,146.40	17.19		1,817.91	1,030.00	Aug. 17-18	544
13	Vegreville	3,515.00								
14	Wetaskiwin	2,383.67	6,663.37	6,788.89		125.52	5,085.78	4,894.04	July 19-20	532
15	Leduc	1,374.77	4,991.96	5,031.17		39.31	2,027.79	1,960.05	Aug. 17-18	963
16	Nanton									
17	Vermilion	3,210.00	10,971.96	8,916.18	2,055.78		7,403.78	293.14	Sept. 9-10	1,738
18	High River	878.17	7,004.60	6,889.96	114.64		2,114.64	1,121.10	Aug. 10-11	539
19	Priddis and Millarville	585.50	1,497.20	1,491.96	5.24				Oct. 2	543
20	Viking and Birch Lake									
21	District	890.00	8,607.13	8,455.50	151.63		14,077.78	7,170.00	Aug. 9-10	776
22	Morinville									
23	Manville	1,167.00	4,738.65	4,678.11	60.04		2,583.77	2,333.93	Sept. 8	637
24	Stettler and District	2,215.50	9,948.86	9,833.25	115.61		10,089.61	6,825.35	July 29-31	704
25	Daysland									
26	Clareholm	1,218.17	4,220.54	4,102.53	118.01		118.01	1,390.85	July 29-30	870
27	Milberton	1,045.17	3,448.80	3,613.31		164.51	2,089.76	1,324.11	Sept. 29	1,008
28	Irvine									
29	Taber	1,869.33	7,780.84	7,580.29	200.55		12,731.24	10,046.02	Aug. 2-4	1,379
30	Innisfree	1,824.63	7,227.69	7,162.35	65.34		2,016.20	1,400.00	Sept. 6-7	749
31	Sedgewick	1,960.77	18,235.38	18,419.68		184.30	9,720.00	5,319.20	Aug. 6-7	887
32	Alx	229.73								

DEPARTMENT OF AGRICULTURE

No.	Society	Gov't grant paid in 1919	Total Receipts	Total Ex- penditure	Balance on Hand	Overdraft	Assets	Liabilities	Date of Exhibition	No. of en- tries
* 80	Hays	1,136.60	.....	.....	.....	.....	.....	.....	.....	.....
* 81	Coronation	789.50	.....	.....	.....	.....	.....	.....	.....	.....
* 82	Griffin Creek	798.33	3,229.78	2,580.44	649.34	.....	1,523.06	1,112.00	Sept. 14-15	...
* 85	Winnifred	1,327.20	5,951.94	5,624.68	327.26	.....	4,141.22	2,813.55	Aug. 10-11	968
† 86	Gadsby	.....	.....	.....	.....	.....	.....	.....	.....	.....
* 87	Edson	363.83	996.80	928.26	14.54	.....	.....	.....	Aug. 25	259
* 88	Spirit River	824.67	.....	.....	.....	.....	.....	.....	.....	.....
89	Chinook	799.00	2,802.85	2,641.36	161.49	.....	3,240.33	1,307.20	Aug. 5-6	441
90	Youngstown	668.17	3,497.14	3,258.31	238.83	.....	4,944.17	2,974.90	Aug. 11-12	265
* 91	Consort	946.00	5,098.00	5,019.60	78.40	.....	2,084.50	1,539.74	Sept. 20-21	844
93	Rocky Mountain House	.....	.....	.....	.....	.....	.....	.....	.....	.....
† 95	Manyberries	.....	.....	.....	.....	.....	.....	.....	.....	.....
* 96	Westlock	541.00	.....	.....	.....	.....	.....	.....	.....	.....
* 97	St. Paul	542.33	.....	.....	.....	.....	.....	.....	.....	.....
† 99	Wheatsheaf	.....	.....	.....	.....	.....	.....	.....	.....	.....
100	Highland	798.50	2,829.32	2,712.56	116.76	.....	5,807.26	2,476.30	Aug. 11	881
† 101	Empress	.....	.....	.....	.....	.....	.....	.....	.....	.....
102	Hanna	435.83	5,231.62	5,055.77	175.85	.....	1,675.85	1,380.35	Aug. 9-10	559
104	Bashaw	339.33	9,023.19	9,042.69	19.50	.....	4,141.00	2,016.61	Aug. 4-5	367
105	Vulcan	.....	1,627.44	1,603.95	23.49	.....	5,174.82	1,020.25	Sept. 22	420
106	Berry Creek	983.33	3,378.71	3,311.09	67.62	.....	3,906.18	1,899.00	Sept. 3	700
107	Waterhole	793.83	3,104.35	3,102.00	2.35	.....	6,894.42	1,894.42	Sept. 16-17	444
108	Oyen	1,181.17	3,816.74	3,790.84	25.90	.....	1,670.55	935.00	Aug. 3-4	1,025
109	Donalda	743.00	11,110.00	10,988.57	121.83	.....	6,521.83	5,596.75	Aug. 2-3	417
111	Peace River	570.83	4,877.76	4,770.41	107.35	.....	1,236.00	1,957.26	Aug. 27-28	437
† 112	Sudfield	.....	.....	.....	.....	.....	.....	.....	.....	.....
† 113	Etzikom	.....	.....	.....	.....	.....	.....	.....	.....	.....
* 114	Ketlaw	300.00	2,640.81	2,609.24	31.57	.....	2,006.57	1,054.00	July 29-30	1,451
115	Bushy	1,005.33	3,601.11	3,460.61	140.50	.....	.....	.....	Sept. 15-16	413
116	Durlingville and Bonnyville	1,032.00	4,636.91	3,478.32	1,158.59	.....	.....	.....	Sept. 8	634
117	Sibbald	709.67	2,282.29	1,171.60	110.69	.....	265.69	561.10	Aug. 2	598
118	Lomond	555.17	2,129.58	2,118.35	11.23	.....	2,674.43	3,410.80	July 31	.....

119	Richdale	238.17	1,445.98	1,431.85	14.13	.....	.....	.....	Aug. 5	293
*120	Lamont	734.67	5,770.57	5,794.92	24.35	.....	1,001.47	1,282.35	Aug. 20	...
121	Big Valley	842.30	8,875.03	8,795.31	79.72	.....	6,281.32	4,019.00	Aug. 13-14	749
123	Veteran	695.43	1,280.63	1,906.40	685.77	.....	.....	.....	Aug. 17	537
124	Mosside	402.00	830.20	903.54	73.34	.....	.....	.....	Sept. 9	437
125	Bye-Moore	431.33	1,324.62	1,142.57	182.05	.....	369.05	60.00	Sept. 3	612
†126	Donnelly	.....	.....	.....	.....	.....	.....	.....	.....	.....
127	Matziwin	566.83	3,341.83	3,138.02	203.81	.....	3,122.45	1,012.00	Sept. 15	517
128	Starland	399.00	2,645.71	2,583.63	62.08	.....	782.41	915.75	Sept. 15	518
†129	Ribstone	.....	.....	.....	.....	.....	.....	.....	.....	.....
130	Rochester	.....	371.55	796.30	424.75	.....	.....	.....	Sept. 21	362
131	Plamondon	.....	246.15	337.15	.....	91.00	.....	.....	Sept. 8	178
132	Sanguo	.....	964.00	1,505.52	.....	559.52	630.65	723.52	Sept. 14	383
133	Goose Creek	.....	1,114.17	978.29	135.88	.....	.....	.....	Aug. 10	439
134	Warspite	.....	745.76	751.54	.....	5.74	.....	.....	Sept. 6	265
†135	Frog Lake	.....	.....	.....	.....	.....	.....	.....	.....	.....
136	Magnolia	.....	903.28	914.03	.....	10.75	529.13	537.75	Aug. 27	447

EXHIBITION ASSOCIATIONS

†200	Lethbridge	.....	.....	.....	.....	.....	.....	.....	.....	.....
202	Calgary	15,000.00	184,005.74	173,294.81	\$10,770.93	.....	\$50,382.96	\$ 9,244.02	June 26-July 3	7,033
203	Edmonton	15,000.00	131,500.05	136,114.10	.....	\$4,614.05	41,766.65	14,976.17	July 5-10	8,444
204	Athabasca	687.00	3,394.46	3,282.61	101.85	.....	1,631.52	1,015.49	Sept. 23-24	566
205	Canrose	3,058.00	18,140.98	18,182.22	41.34	.....	11,189.29	11,193.29	July 15-17	965

The asterisk (*) means "Returns not complete."

The obelus (†) means "No fair held."

No.	Society	Amt. paid in Prizes at Exhibi- tion	Amount paid in prizes for Sports	Field Grain	Seed Fair	Poultry Show	Horticul- tural Show	Good Farms	Gov't grant paid in 1920
* 80	Hays								
* 81	Coronation								
82	Griffin Creek	1,125.75							782.50
85	Winnifred	1,540.25	307.75						1,176.50
† 86	Gadsby								
87	Edson	557.50							500.67
* 88	Spirit River								
89	Clunook	838.25	174.50						708.84
90	Youngstown	840.50							710.00
* 91	Consort								
93	Rocky Mountain House	1,121.95							894.64
† 95	Manberries								
* 96	Westlock								
* 97	St. Paul								
† 99	Wheatshaf								
100	Highland	839.25							713.84
† 101	Empress								
102	Hanna	907.75	485.00						745.17
104	Bashaw	624.50	220.09						412.33
105	Aulcan	357.50							337.34
106	Berry Creek	987.85	404.00						808.57
107	Waterhole	733.75	300.00						637.17
108	Oyen	1,684.00	398.50		69.00				1,331.67
109	Donalda	1,582.00	466.95						1,191.67
† 112	Peace River	805.00	1,091.00						536.67
† 113	Sudfield								
† 115	Edzikom								
114	Redlaw	1,040.00	382.50						693.33
115	Bushy	1,758.25	64.00						1,639.64
116	Durlingville & Bonnyville	1,404.30			97.00	225.47			961.20
117	Sibbald	1,191.75	15.40						794.50

118	Lomond	.....	236.00	.....	.....	.....	689.64
119	Richdale	.....	460.00	.....	.....	.....	258.67
*120	Lamont	.....	151.00	.....	.....	.....	1,005.17
121	Big Valley	.....	1,363.75	.....	.....	.....	997.17
122	Veteran	.....	75.00	.....	.....	.....	*703.44
123	Mosside	.....	70.50	.....	.....	.....	394.84
124	Bye-Moor	.....	71.19	.....	.....	.....	484.84
125	Donnelly	.....	.....	.....	.....	.....	.....
126	Starland	.....	245.00	.....	.....	.....	1,036.92
127	Ribstone	.....	.....	.....	.....	.....	570.30
128	Rochester	.....	.....	.....	.....	.....	.....
*129	Plamondon	.....	.....	.....	.....	.....	291.17
130	Saugando	.....	275.50	.....	.....	.....	143.34
131	Goose Creek	.....	91.00	.....	.....	.....	310.67
132	Warspite	.....	21.00	.....	.....	.....	509.50
133	Frog Lake	.....	.....	.....	.....	.....	211.34
134	Magnolia	.....	.....	.....	.....	.....	.....
135	.....	.....	.....	.....	.....	.....	513.14
136	.....	.....	.....	.....	.....	.....	.....

EXHIBITION ASSOCIATIONS

+200	Lethbridge	.....	.....	.....	.....	.....	.....
201	Calgary	.....	811,886.00	.....	.....	.....	\$15,000.00
202	Edmonton	21,435.30	15,000.00
203	Athabasca	833.75	569.17
204	Canrose	5,014.25	3,074.20
205	1,670.00

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POULTRY ASSOCIATIONS

No.	Society	Gov't Grant Paid in 1919	Total Receipts	Total Expen- diture	Balance on Hand	Over- draft	Assets	Liabil- ities	Date of Show	Gov't Grant 1920
*793	Edmonton	\$1,248.74								
794	Calgary	1,755.84	\$9,374.71	\$9,139.68	\$ 215.03		\$1,637.40	\$2,825.00	Dec. 23-26	\$2,331.90
795	Lethbridge	605.23	1,916.73	1,981.61			1,080.13	639.88	Dec. 6-11	568.00
*797	Vulcan	152.50								
799 1	Medicine Hat	605.27	2,088.71	2,050.13	38.58		1,116.83	600.00	Dec. 17-20	520.84
*799 3	Wetaskiwin	300.00								
*799.4	Red Deer	300.00								

HORTICULTURAL ASSOCIATIONS

766	Edmonton	\$300.00	\$4,237.35	\$4,186.85	\$ 50.50		\$896.65	\$119.80	Aug. 14-15	\$300.00
767	Calgary	300.00	1,678.35	1,385.31	293.04		293.04		Aug. 24-26	300.00
768	Red Deer	300.00	548.20	632.87			101.17	120.00	Aug. 19	212.34
*769	St. Albert	274.00								
*770	Magrath	165.00								
771	Taber		219.83	174.44	45.38		45.38		Aug. 25	116.30
*772	Camrose	300.00								
744	Medicine Hat	300.00	1,328.10	1,326.72	1.38		9.48	30.00	Aug. 19-20	300.00
*775	Craigmyle									
777	Islay	53.70	254.39	227.32	27.07		32.57		Sept. 3-4	40.40
*778	Neerlandia	172.50								
779	Bellevue	300.00	1,354.70	969.00	385.70		493.20	107.50	Sept. 6	300.00
779.1	Kinsella		378.15	382.16			25.00	4.01	Sept. 22	46.17

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